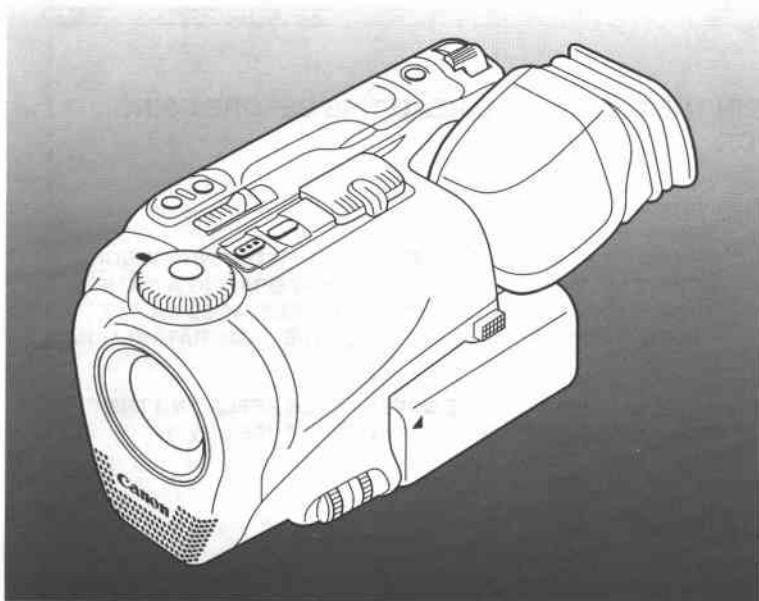


8mm VIDEO CAMCORDER

Instruction Manual



Canon
UC-X2^{Hi} / UC-X20^{Hi}

Hi8

Introduction

Basic
Operation

Advanced
Functions

Eye Control

Additional
Information

Important Usage Instructions

CAUTION:

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION:

TO REDUCE THE RISK OF ELECTRIC SHOCK AND TO REDUCE ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:

CUSTOMERS IN THE U.K. SHOULD READ THIS BEFORE USING THIS PRODUCT.

CHANGING THE FUSE

THE MAINS LEAD ON THIS PRODUCT IS FITTED WITH A NON-REWIREABLE (MOULDED) PLUG, INCORPORATING A 3 AMP FUSE. SHOULD THE FUSE NEED TO BE REPLACED AN ASTA OR BSI APPROVED BS1632 FUSE OF THE SAME RATING MUST BE USED.

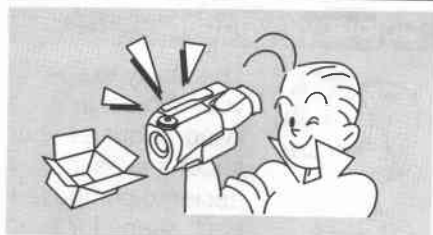
ALWAYS REFIT THE FUSE COVER AFTER REPLACING THE FUSE. NEVER USE THE PLUG WITH THE FUSE COVER OMITTED.

CHANGING THE PLUG

IF THE FITTED PLUG IS NOT SUITABLE FOR YOUR SOCKET OUTLETS, IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED IN ITS PLACE. IF POSSIBLE FIT AN APPROPRIATE 3 AMP FUSE. IF THE NEW PLUG HAS NO FUSE, THEN FIT A 5 AMP FUSE AT THE DISTRIBUTION BOARD.

THE SEVERED PLUG MUST BE DESTROYED IMMEDIATELY TO AVOID ANY POSSIBLE ELECTRIC SHOCK HAZARD.

Thank you for choosing a Canon



First, we'd like to thank you for purchasing this Canon camcorder. Its advanced technology makes it very easy to use — you will soon be making high-quality videos which will give you pleasure for years to come.

To get the most out of your new camcorder, you should read this manual thoroughly — there are many sophisticated features which will add to your recording enjoyment.

Getting started

To get started, you will need to read these sections:

“Basic Recording”

“Power Sources”

“Cassettes”


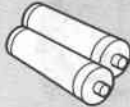


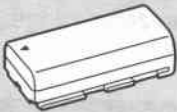


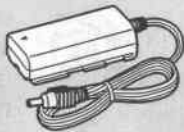
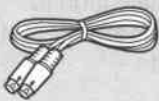


“Preparing the Camera”

Then you can go on to find out about the more advanced features.

Using this manual

As well as using the table of contents and the alphabetical index, you can look up the different parts and functions in the sections called “Nomenclature” and “Viewfinder Displays.” There's also a “Troubleshooting” section in case you run into any problems.

Check that this package contains the following accessories:

WL-60 Wireless Controller 	Two AA batteries 
SS-200 Shoulder Strap 	Lens cap and lens cap cord 
BP-911 Battery Pack 	CA-900 Compact Power Adapter 
Lithium button battery 	DC-900 DC Coupler 
S-150 S-video Cable 	PC-170ST Stereo SCART Cable (Europe) 
STV-150 Stereo Video Cable (Asia and Oceania) 	

Main Features

Eye Control (UC-X2Hi)



Control focus and other functions without lifting a finger. The UC-X2Hi knows what you are looking at, and how best to record it.

Optical Image Stabilizer



Optical technology stabilizes your recordings even at the furthest reaches of the zoom range.

20× optical zoom



From wide-angle to world-beating 20× telephoto — with unparalleled optical quality. The UC-X2Hi's digital zoom doubles this magnification for even more dramatic results.

Hi8



Hi8 is the format that video professionals choose when they want high quality, long recording times and compact size.

Colour viewfinder



The ability to see your subject in living colour as you shoot makes it easier to compose each scene for maximum impact.

Digital effects (UC-X2Hi)



Advanced digital technology allows you to add special effects and varied scene transitions to your recordings.

Hi-fi stereo sound



The compact integral microphone offers the depth and realism of AFM in full dynamic stereo.

Digital picture quality



Canon's new digital integrated circuit delivers outstanding colour reproduction and picture detail.

Lithium ion power supply



These advanced camcorders feature the latest in portable power technology.

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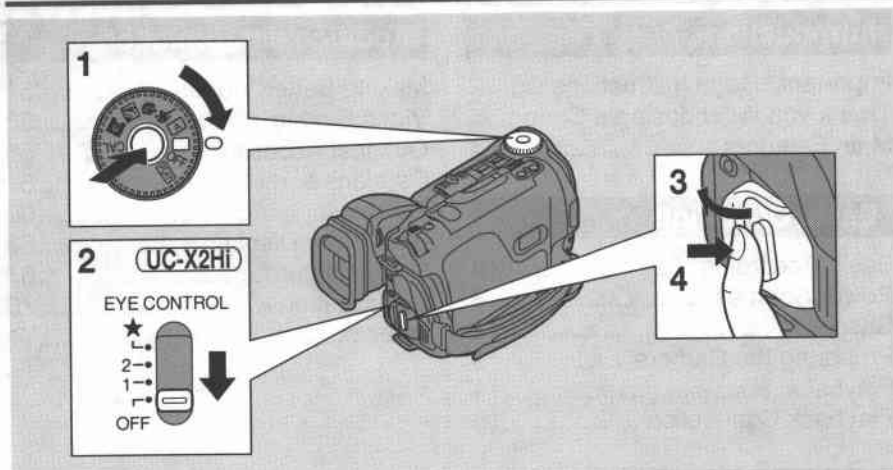
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Basic Recording



Before you start recording

Complete the following steps:

- Attach a power source (p. 8).
- Load a cassette (p. 12).
- Adjust the viewfinder, fasten the grip belt and take off the lens cap (p. 13).

You may also want to install the backup battery (p. 11) in order to set the date and time display (p. 24).

To record

1. Turn the program selector to the position.

- Press and hold the lock button.
- This selects the camera's Easy Recording program. It allows you to simply point and shoot without making any manual adjustments (see p. 31).

2. Set the EYE CONTROL switch to OFF.

- This applies to the UC-X2Hi only.

3. Open the STANDBY cover.

- The operation indicator lights up and PAUSE appears in the viewfinder — the camera is now in "record pause mode."
- The camera will turn itself off if you leave it in record pause mode for more than about five minutes. To return to record pause mode, close and reopen the STANDBY cover, or set the program selector to OFF and then back to CAMERA.

4. Press the start/stop button to begin recording.

- The tally lamp flashes and REC appears in the viewfinder.

5. Press the start/stop button again to pause recording.

- The camera returns to record pause mode and PAUSE reappears in the viewfinder.
- You can stop and restart recording as often as you like by pressing the start/stop button.

6. Close the **STANDBY** cover.

- As long as the program selector is set to one of the camera's recording programs, you can use the **STANDBY** cover to turn the camera on and off. This makes it easy to save battery power, and prevents accidental operation of the start/stop button.

When you have finished recording

- Replace the lens cap.
- Unload the cassette.
- Set the program selector to **OFF**.
- Disconnect the power source.

Note:

- If you turn the camera off using the **STANDBY** cover, it will remember your chosen focus, exposure, white balance and shutter speed settings (and whether or not a title was displayed). If you turn it off using the program selector, these settings are erased from the memory.

Power Sources

Before operating your camera, you will need to use the power adapter to:

- provide power from a mains outlet**
- or**
- charge a battery pack**

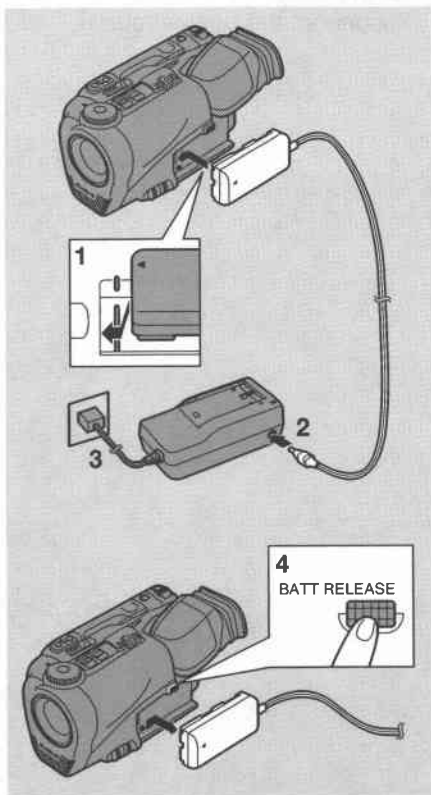
Notes:

- The power adapter converts current from a household power outlet (100–240 V AC, 50/60 Hz) to the DC current used by your camera.
- If the adapter is used next to a TV, it may cause the TV to emit noise — move the adapter away from the TV or the aerial cable.

Connecting the camera to an AC outlet

Use the power adapter and the DC coupler to provide your camera with instant power from an AC outlet.

- 1. Attach the DC coupler to the camera.**
 - Align the triangle on the DC coupler with the line on the camera.
- 2. Connect the DC coupler to the adapter.**
- 3. Plug the adapter into a mains outlet.**
- 4. Detach the DC coupler after use.**
 - Press and hold the BATT RELEASE button.
 - Always turn the camera off before removing the power source.



Charging and attaching the battery pack

Your battery pack was partially charged before it left the factory. It should have enough power for you to check that your camera is working properly. However, you must charge the battery pack fully if you want it to power the camera for more than a few minutes.

1. Attach the battery pack to the power adapter.

- Align the triangle on the battery pack with the line on the camera.
- Make sure the DC coupler is not connected, or the battery pack will not be charged.

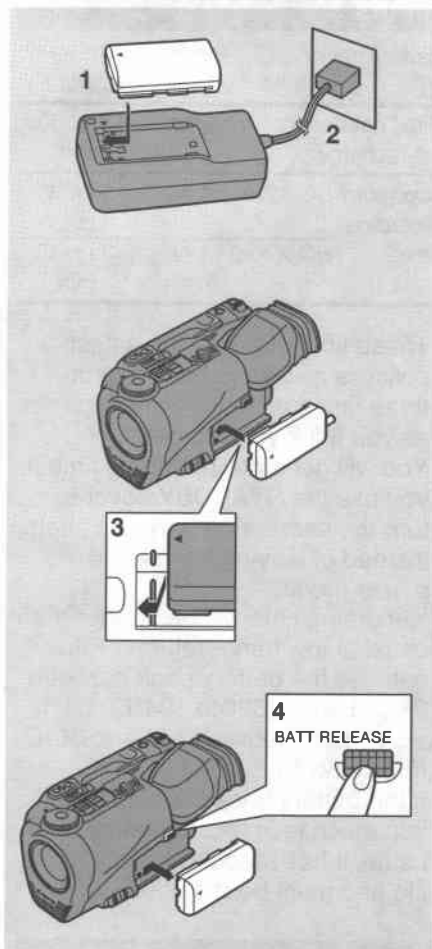
2. Plug the adapter into a mains outlet.

- The charge indicator flashes red to show that charging is in progress. Single flashes mean that the battery pack is less than 50% charged. Double flashes mean that it is between 50% and 75% charged. Triple flashes mean that it is more than 75% charged.
- The indicator glows steadily when the battery pack is fully charged.

3. Take the battery pack off the adapter and attach it to the camera.

4. Detach the battery pack after use.

- Press and hold the BATT RELEASE button.
- Always turn the camera off before removing the power source.

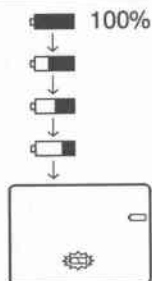


Charging and recording times

Battery pack	BP-911 (supplied)	BP-924 (optional)
Time needed for full recharge	2 hr.	3 hr. 30 min.
Maximum recording time	UC-X2Hi 1 hr. UC-X20Hi 5 min.	2 hr. 30 min. 2 hr. 45 min.

- These times vary — the safest policy is always to have two or three times as many battery packs as you think you will need.
- You will get more recording time if you use the STANDBY cover to turn the camera off between shots, instead of leaving it in record pause mode.
- Recording time will be shorter than usual at low temperatures. You can use the battery pack between 0° and 40°C (32° to 104°F), but it works best between 10° and 30°C (50° to 86°F).
- If the battery pack starts to give you much less recording time than usual, it has reached the end of its life and must be replaced.

How much power is left?

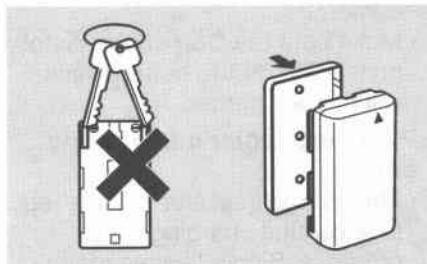


The indicator in the viewfinder shows you approximately how much charge the battery pack has left.

When to recharge

You can recharge a lithium ion battery pack whenever it is convenient. Unlike a conventional battery pack, it does not have to be fully discharged first. However, as the battery pack will naturally discharge itself over time, it is best to charge it the same day you plan to use it, or the day before.

Taking care of the battery pack



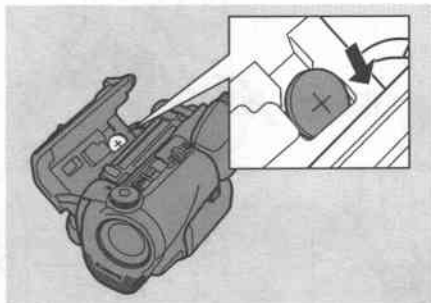
Always attach the terminal cover.

- Do not allow any metal objects to touch the terminals, as this can cause a short circuit and damage the battery pack. Attach the terminal cover whenever the battery pack is not being used.

Keep the terminals clean.


- The camera, adapter or battery pack will not work properly if the terminals are dirty. Check them before use, and wipe them with a dry cloth or tissue if necessary.

Installing the backup battery



Open the cassette cover (p. 12), and insert the CR2025 lithium button battery with the + side facing upwards.

This backup battery allows the camera to remember the date and time and other settings when the main power source is removed. It has a life span of about a year.

When it needs replacing (or if it has not been installed), the  mark flashes in the viewfinder. Remove the old battery by pushing it down and pulling it out. Make sure to attach a power source to the camera first, and turn it off using the **STANDBY** cover. This way it will remember your chosen settings when you change the battery.

Battery pack

DANGER!

Treat the battery pack with care.

- Keep it away from fire (or it might explode).
- Do not expose the battery pack to temperatures greater than 60°C (140°F). Do not leave it near a heater, or inside a car in hot weather, for example.
- Do not try to disassemble or modify it.
- Do not drop or knock it.
- Do not get it wet.

Backup battery

WARNING!

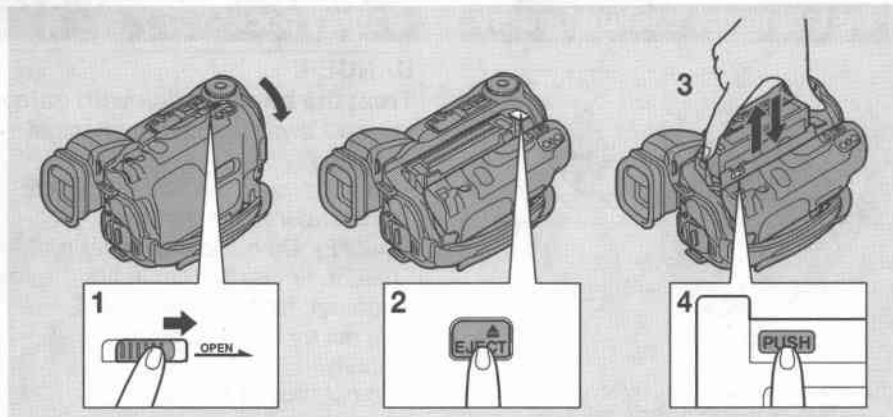
- The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.
- Replace the battery with a Sony, Sanyo or Panasonic CR2025, or Duracell DL2025. Use of another battery may present a risk of fire or explosion.
- The used battery should be handed back to the supplier for safe disposal.

Cautions:

- Do not pick up the battery using tweezers or other metal tools — this will cause a short circuit.
- Wipe the battery with a clean, dry cloth to ensure proper contact.
- If the battery is swallowed, consult a physician immediately as the battery case may break down and the battery fluids may damage the stomach and intestines.
- Do not disassemble, heat, or immerse the battery in water, to avoid the risk of explosion.


Cassettes

12



Use video cassettes marked with a **Hi8** or **8**. For maximum quality, Hi8 ME tapes are recommended.

Loading and unloading

1. Slide the **OPEN** switch and open the cassette compartment cover.
2. Press the **EJECT**  button and wait for the cassette compartment to open.
3. Load or unload the cassette.
 - Insert the cassette gently with the window facing out.
 - Remove the cassette by pulling it straight out.
4. Press the **PUSH** mark on the compartment until it clicks, and wait for it to close.
5. Click the cover back into place.

Notes:

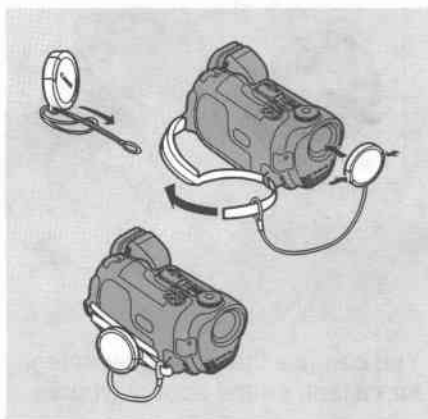
- See p. 29 for information on protecting your recordings from accidental erasure.
- After loading a cassette, use record search (p. 30) to find the point where you want to start recording.
- Do not interfere with the cassette compartment while it is opening or closing automatically.
- Do not leave the cassette in the camera after use — return it to its case and store it in a cool, clean, dry place.
- The holes in the back of the cassette are used for transferring information — do not cover them.

Preparing the Camera

You should already have attached a power source to the camera and loaded a cassette. When you have completed the following steps, you will be ready to start recording.

Prepare the lens cap

- Attach the cord to the lens cap, and pass the grip belt through the loop on the cord.
- Hook the lens cap on to the grip belt while you are recording, and place it over the lens when you have finished.



Fasten the grip belt

- Release the Velcro fastening and hold the camera with your right hand while you adjust the belt with your left.



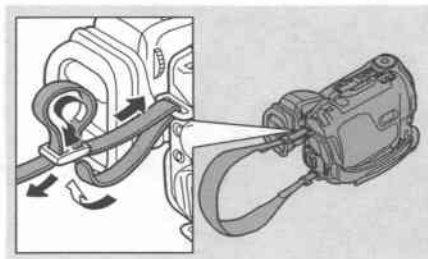
Adjust the viewfinder

- Turn the camera on, raise the viewfinder to the vertical position and turn the viewfinder focusing wheel until the viewfinder displays are clearly focused.

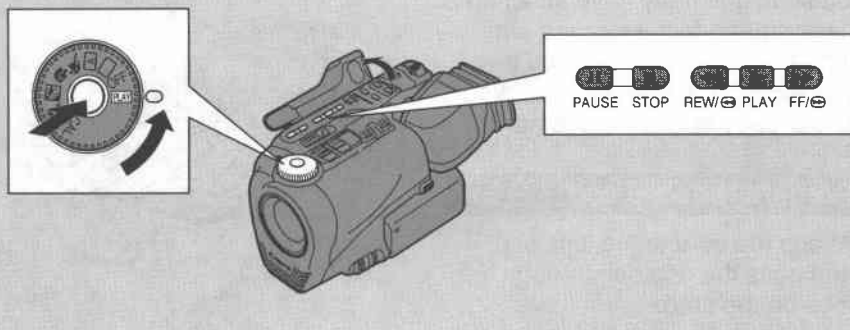


Attach the shoulder strap

- For extra security and portability, attach the shoulder strap before using the camera.
- Pass the ends through the attachment bars and adjust the length as shown.



Playback



14

Basic Operation

You can use the viewfinder screen for instant, on-the-spot playback.

To play back your recordings on a TV, see p. 16. To use the wireless controller, see p. 23.

1. Attach a power source and set the program selector to PLAY.

- Press and hold the lock button.
- The operation indicator lights up.

2. Load the cassette.

3. Press the ▶ button to start playback.

- To end playback, press the ■ button.
- To wind the tape forwards, stop playback and press the ▶▶ button.
- To wind the tape backwards, stop playback and press the ◀◀ button.

Special playback

Still playback

Press the PAUSE || button. To resume normal playback, press it again, or press the PLAY ▶ button. The camera automatically goes into stop mode after about five minutes' still playback.

Fast forward playback

To play back the recording at about 7 times normal speed, press and hold the FF ▶▶ button during normal playback.

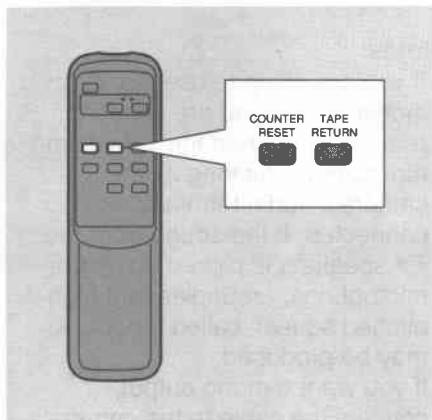
Rewind playback

For reverse playback at about 5 times normal speed, press and hold the REW ◀◀ button during normal playback.

High-speed search

To play back the recording at about 11 times normal speed, press and hold the FF ▶▶ button during normal fast forward. For reverse playback at about 11 times normal speed, press and hold the REW ◀◀ button during normal rewind.

Tape return



Use the wireless controller's TAPE RETURN button to quickly return to a scene you want to see again:

- 1. Press the C. RESET button during playback if you come across a scene you want to watch again later.**
 - The tape counter is reset to 0:00:00.
- 2. When you have ended playback, press the TAPE RETURN button.**
 - The tape rewinds and stops when the counter nears 0:00:00.
 - You can cancel tape return by pressing the STOP ■ button.
- 3. Start playback.**

About Hi8

To record or play back in the Hi8 format, you need both a Hi8 camcorder and a Hi8 cassette. You can use either MP or ME cassettes, but MP cassettes are recommended.

A Hi8 camcorder can record or play back in either the Hi8 format or standard 8mm format, depending on the tape used.

The superior quality of Hi8 can best be appreciated on a TV which has S-video input.

Notes:

- Noise bars appear on the screen during special playback and the soundtrack cannot be heard. On certain TVs the picture may roll and divide, or appear in black and white, and the high-speed search picture may not be visible.
- During still playback, the picture flickers, and fast action scenes may appear blurred.
- The tape counter is reset when a cassette is loaded.

Playback Connection

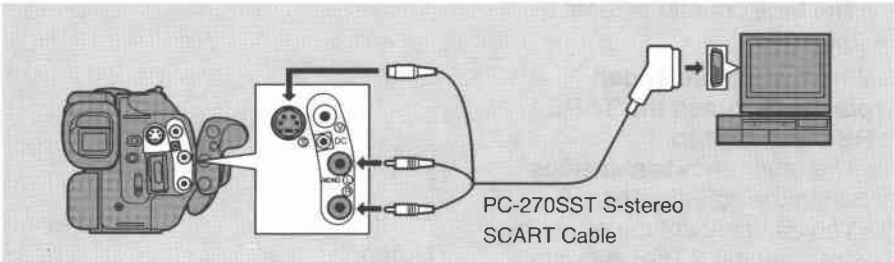
You can connect the camera to a TV or VCR in order to play back your recordings. You will need to attach a power source to the camera (see p. 8).

See your TV or VCR instruction manual for further details.

Notes:

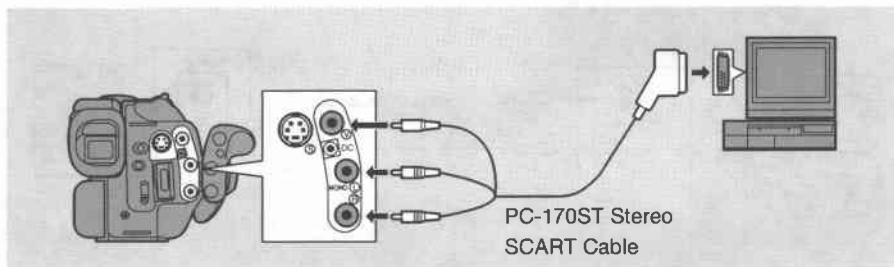
- If you are going to use the TV as a monitor while you are shooting, remember to keep the TV volume turned down as long as the camera's audio terminals are connected. If the sound from the TV speakers is picked up by the microphone, an unpleasant high-pitched squeal, called feedback, may be produced.
- If you want a mono output, connect the cable to the camera's left audio terminal (L), but do not connect the right audio terminal (R). This will give a combined mono output from both left and right channels.

If your TV (or VCR) has a SCART terminal (S-video)



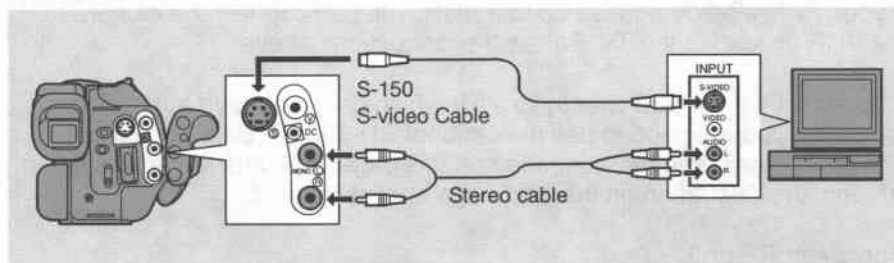
- Connect the camera using the optional PC-270SST S-stereo SCART Cable. Connect the white plug to the white audio terminal (L) (left). Connect the red plug to the red audio terminal (R) (right). Connect the S-video plug to the S-video terminal (S).
- If you are connecting the camera to a VCR, set the input selector on the VCR to LINE.

If your TV (or VCR) has a SCART terminal (without S-video)



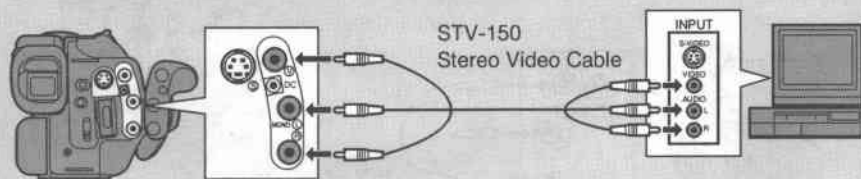
- Connect the camera using the PC-170ST Stereo SCART Cable. Connect the white plug to the white audio terminal ㊤ (left). Connect the red plug to the red audio terminal ㊦ (right). Connect the yellow plug to the yellow video terminal ㊶.
- If you are connecting the camera to a VCR, set the input selector on the VCR to LINE.

If your TV (or VCR) has an S-video input terminal



- Use the S-150 S-video Cable to connect the S-video terminal ㊤. Use a stereo cable (or the STV-150 Stereo Video Cable) to connect the audio terminals. Connect the white plug to the white audio terminal ㊤ (left). Connect the red plug to the red audio terminal ㊦ (right). (Do not connect the yellow plug if you are using the STV-150.)
- Set the TV/VIDEO selector on the television to VIDEO.
- If you are connecting the camera to a VCR, set the input selector on the VCR to LINE.

If your TV (or VCR) has audio/video input terminals



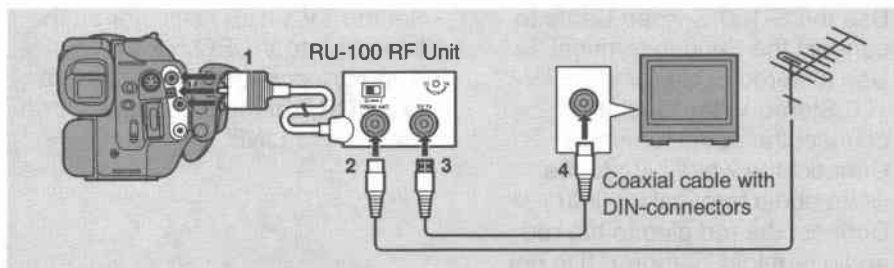
- Connect the camera using the STV-150 Stereo Video Cable. Connect the white plug to the white audio terminal (L) (left). Connect the red plug to the red audio terminal (R) (right). Connect the yellow plug to the yellow video terminal (V).
- Set the TV/VIDEO selector on the television to VIDEO.
- If you are connecting the camera to a VCR, set the input selector on the VCR to LINE.

If your TV does not have audio/video terminals

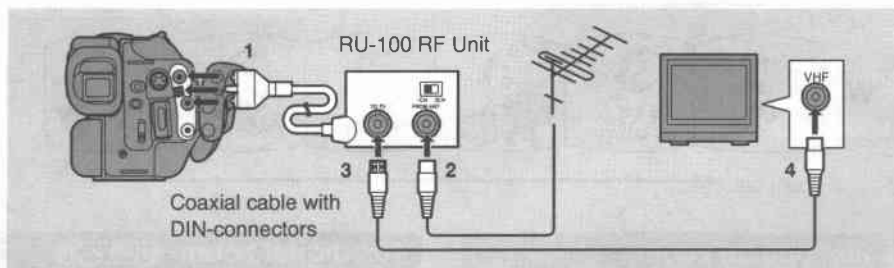
If your TV is already hooked up to a VCR, you can connect the camera to the VCR instead of the TV. Follow the instructions above.

To connect the camera directly to a TV which does not have audio/video terminals, you will need to use the optional RU-100 RF Unit. For Europe and other areas, see the illustration on this page. If you have the Australian RF unit, the illustration on the next page applies instead.

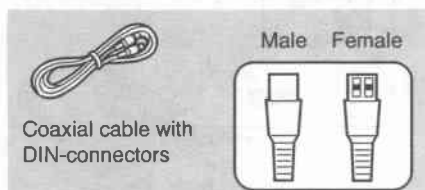
European RF unit



Australian RF unit



Connecting the RF unit

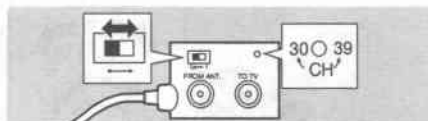


1. Connect the RF unit to the camera.
2. Connect the aerial cable to the **FROM ANT.** terminal on the RF unit.
3. Connect the “female” DIN-connector on the coaxial cable to the **TO TV** terminal on the RF unit.
4. Connect the “male” connector to the aerial input on the TV.

Selecting the video channel

The video channel is the channel which is not used by a broadcasting station in your area and can be used for cassette playback. Turn the TV on, start playback on the camera (see p. 14), and adjust the RF unit.

European RF unit



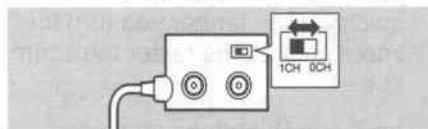
First set the G/I selector on the RF unit.

- In continental Europe, set it to G.
- In the UK, Hong Kong and South Africa, set it to I.

If it is not set properly, you will be able to see the picture, but not hear the sound.

Next, set the TV and the CH selector on the RF unit to the video channel (somewhere between 30 and 39). The selector is factory-set to channel 32. Adjust it by turning until the picture is clear.

Australian RF unit

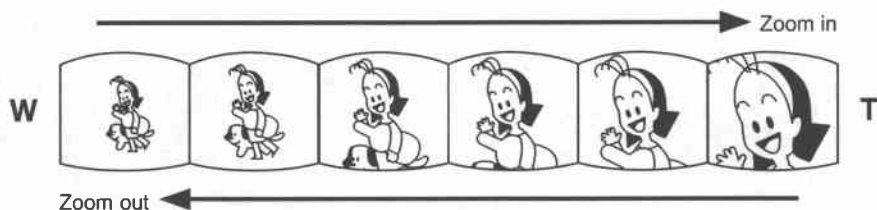


Set the TV and the RF unit to channel 0 or 1.

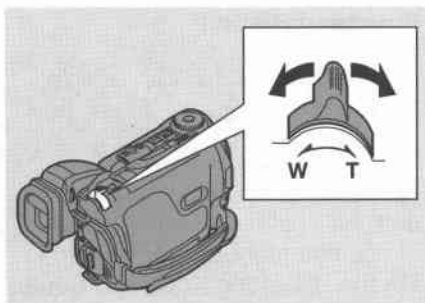
Note:

- Turn the camera off or disconnect it from the RF unit when you want to watch a broadcast programme.

Zooming



20× optical zoom



The camera's 20× zoom lens allows you to choose the best picture angle for each scene:

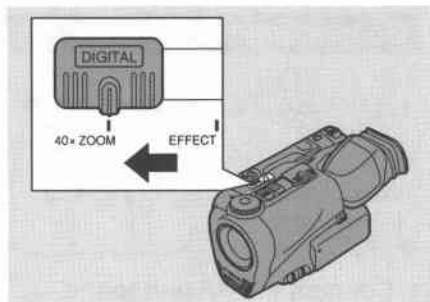
- Turn the zoom control towards W to zoom out to wide-angle.
- Turn it towards T to zoom in to telephoto.

You can also control the speed of zooming:

- Move the control slightly to zoom slowly.
- Turn it further to zoom more quickly. (The further you turn the zoom control, the faster the zoom speed.)

The T and W buttons on the wireless controller adjust the picture angle, but not the zoom speed.

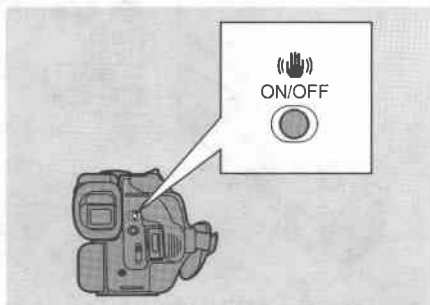
40× digital zoom UC-X2Hi



Slide the DIGITAL switch to the 40× ZOOM position to double the UC-X2Hi's zoom range.

The zoom control continues to work as usual, but if you keep zooming beyond 20× magnification (the limit of the optical zoom), the camera will begin to enlarge the image electronically. You can freely zoom in and out between 1× and 40× magnification — the camera automatically switches between optical zooming (up to 20×) and digital zooming (20 to 40×).

Optical Image Stabilizer



With most camcorders, even the slightest hand movements will be noticeable during telephoto recording. However, this camera's Optical Image Stabilizer allows you to obtain steady recordings even at 20× or 40× magnification. Unlike electronic image stabilizers, it causes no loss of picture quality. The Optical Image Stabilizer can compensate for a wide range of camera movement — you can record stable images even if you are shooting from a moving car.

Before you start recording push the (●) ON/OFF button to turn the image stabilizer on or off.

- The (●) mark appears in the viewfinder when the stabilizer is on.

Notes:

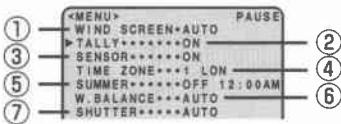
- When you want to get as close as possible to your subject, keep the zoom at the wide-angle position. You can focus on a subject as close as 1 cm (3/8 in).
- Image resolution is slightly lower when the magnification is greater than 20×.
- The image stabilizer is designed to deal with a normal degree of camera shake.
- Keep the image stabilizer turned off when the camera is mounted on a tripod.
- The image stabilizer cannot be turned off when the program selector is set to the ☐ (Easy Recording) position.

Using the Menu

Some of the camera's advanced functions are selected from menus which appear in the viewfinder.

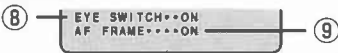
There are two menus. When the camera is in record pause mode, you can open the camera menu. When the program selector is set to **PLAY**, you can open the playback menu.

Camera menu



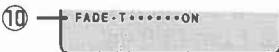
- ① Wind screenp. 43
- ② Tally lampp. 29
- ③ Remote sensorp. 23
- ④ World clockp. 25
- ⑤ Summer timep. 26
- ⑥ White balancep. 35
- ⑦ Shutter speedp. 36

UC-X2Hi



- ⑧ Eye-controlled switchesp. 49
- ⑨ Eye Control framep. 47

UC-X20Hi



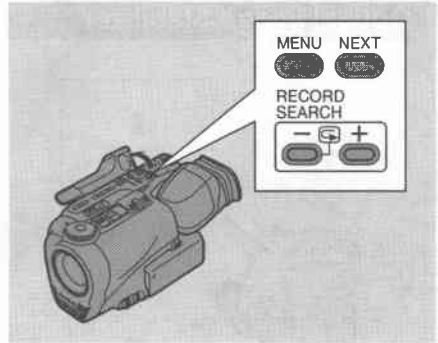
- ⑩ Fade Triggerp. 37

Playback menu



- ⑪ Bilingual sound trackp. 43
- ⑫ Edit modep. 44
- ⑬ Remote sensorp. 23

Turn to the appropriate page for a detailed explanation of each function.

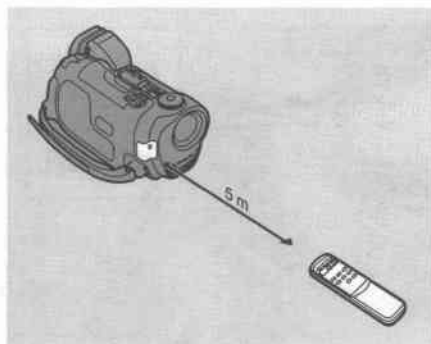


1. Press the **MENU** button to open the menu.
2. Press the **NEXT** button to point the arrow at the function you want.
 - Each time you press the button, the arrow moves on to the next item on the menu.
3. Press the **+** or **-** button to turn the function on or off, or change its setting.
4. Press the **MENU** button to close the menu.

Notes:

- To return all the functions on one menu to their original settings, open the menu then press and hold the **C. RESET** button.
- You can display the menus on a connected TV screen using the wireless controller's **ON SCREEN** button.

Remote Control



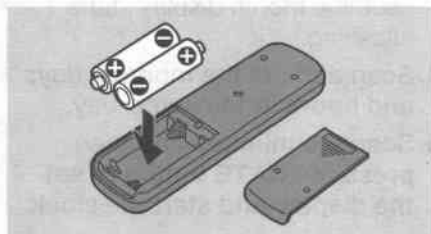
The supplied wireless controller can operate the camera from a distance of up to 5 metres (16 feet). Point it at the camera's remote sensor while you press the buttons.

The tally lamp lights up to let you know that the camera is in range and responding to your commands.

There are two functions which can only be operated using the wireless controller:

- Tape return (p. 15)
- On-screen viewfinder displays (p. 63)

Inserting batteries



Insert two AA batteries, following the \oplus and \ominus markings. Be careful not to reverse the polarity of the batteries.

Turning off the remote sensor



MENU

(see p. 22)

►SENSOR*****OFF

The remote sensor can be turned off to prevent interference from other Canon wireless controllers being used nearby.

1. Open either the camera menu or the playback menu, and point the arrow at SENSOR.

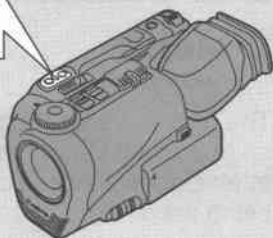
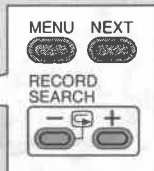
2. Select the OFF setting and close the menu.

- S **OFF** appears in the viewfinder.

Notes:

- Bright light falling on the sensor may shorten the controller's operating distance.
- The camera may have difficulty picking up the remote control signals at extremely close range.
- Do not leave the controller exposed to direct sunlight, or in hot or humid places.
- When the batteries are exhausted, replace them both at the same time, using two batteries of the same brand.

Date and Time



The date and/or time display appears in the viewfinder when you press the DATE button. If you start recording now, it will be superimposed on the scene. Press the button again to cancel the display.



The date and time display can also be operated by Eye Control (see p. 49).

Setting the date and time

Set the date and time display when you first start using your camera. Install the backup battery before you begin (see p. 11).

1. Put the camera in record pause mode.

- If you are going to take the camera overseas, you will want to use its world clock. In this case, select your home time zone from the menu now (see p. 25).
- If you are correcting the date and time, make sure the world clock is set to your home time zone.

- If you are on summer time now, you should put the camera on summer time (p. 26). You can do this at the same time as selecting your home time zone.

2. Press and hold the DATE button until the year display in the viewfinder starts flashing.

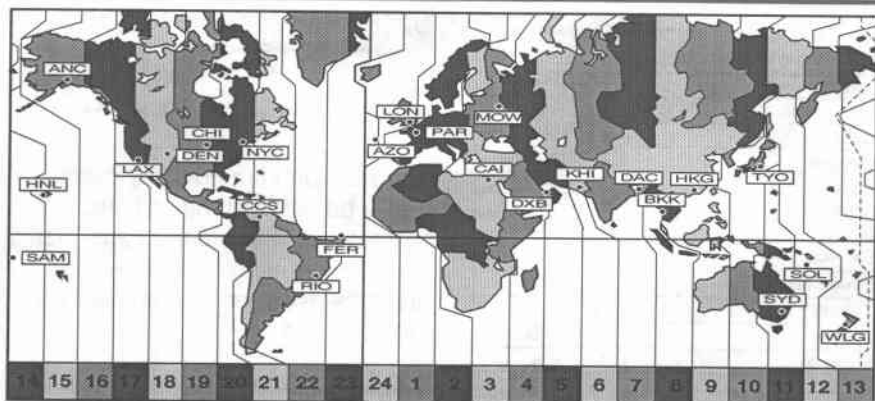
- If the menu is open, it will close automatically.

3. Press the + and – buttons to scan the year display, then press the NEXT button to set it.

- Press + or – once to scan a year at a time. Press and hold to scan quickly.
- As soon as the year display is set, the month display starts flashing.

4. Scan and set the months, days and hours in the same way.

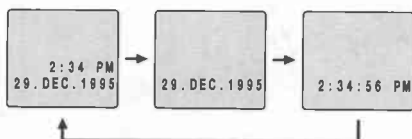
5. Scan the minutes and then press the DATE button to set the display and start the clock.



Changing the style

When the date and/or time is displayed in the viewfinder, you can change the display style by pressing the NEXT button. You can choose from three different date/time displays.

Each time you press the NEXT button the display changes as follows:



The camera will remember which type of display you have selected.

Changing time zones

MENU
(see p. 22)

▶ TIME ZONE...1 LON

When you travel to another time zone, there is no need to reset the date and time. Use the camera's world clock to display the correct time for your destination. When you set the date and time (p. 24), select your home time zone. Afterwards, you can select the zone you are visiting.

First, identify the time zone:

If you are visiting somewhere in the same time zone as:	Set the menu to:
London	1 LON
Paris	2 PAR
Cairo	3 CAI
Moscow	4 MOW
Dubai	5 DXB
Karachi	6 KHI
Dacca	7 DAC
Bangkok	8 BKK
Hong Kong	9 HKG
Tokyo	10 TYO
Sydney	11 SYD
Solomon	12 SOL
Wellington	13 WLG
Samoa	14 SAM
Honolulu	15 HNL
Anchorage	16 ANC
Los Angeles	17 LAX
Denver	18 DEN
Chicago	19 CHI
New York	20 NYC
Caracas	21 CCS
Rio de Janeiro	22 RIO
Fernando de Noronha	23 FER
Azores	24 AZO

1. Open the camera menu and point the arrow at TIME ZONE.

2. Select the time zone.

- If you set the date and time without closing the menu, this will become your home time zone.
- If you close the menu, the camera takes this as the time zone you will be visiting. It will be shown in the viewfinder (but not recorded) whenever the date/time is displayed.

Changing to summer time



(see p. 22)

►SUMMER.....ON

The date and time display can easily be set to summer time. Remember, if you are on summer time now, you should follow the steps below when you are setting the date and time.

1. Open the camera menu and point the arrow at SUMMER.

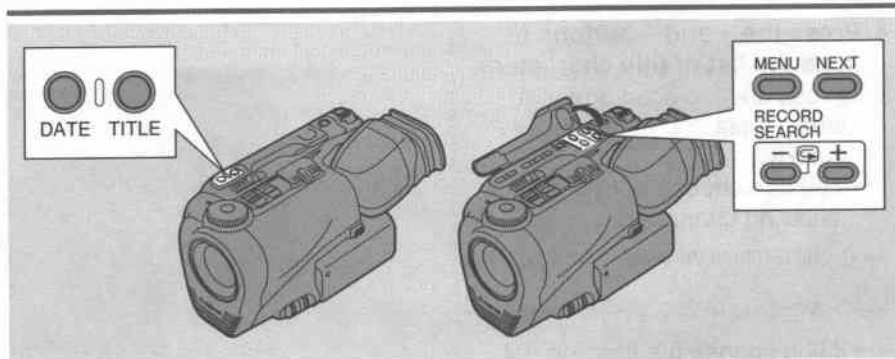
2. Select the ON setting.

- You can now set the date and time by pressing and holding the DATE button (see p. 24).
- If you have already set the date and time, close the menu.
- The * mark will be shown in the viewfinder (but not recorded) whenever the date/time is displayed.

Notes:

- If you need to correct date and time, make sure the world clock is set to your home time zone.
- The date can be set to any year between 1995 and 2015.

Titles



You can write your own titles and store them in the camera's memory in order to add them to your recordings.

The title is displayed in the viewfinder when you press the **TITLE** button. If you start recording now, it will be superimposed on the scene.

Press the button again to cancel the display. If it does not appear in the viewfinder, it will not be recorded.

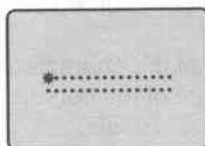


The title display can also be operated by Eye Control (see p. 49).

Writing a title

Enter your title in the camera's memory before you start recording. Remember to install the backup battery first (see p. 11).

The title can be one or two lines of up to 16 characters each.



← These lines appear in the viewfinder when you are writing a title.

1. Put the camera in record pause mode.
2. Press and hold the **TITLE** button until the title lines appear in the viewfinder.
 - If you have already entered a title in the memory, it will be displayed in the viewfinder.
 - The first dot (or character) flashes to show where the cursor (the insertion point) is located.
3. Press the **NEXT** button to move the cursor to the point where you want to start the title.
 - Press once to move the cursor one space right. Press and hold to move it quickly.

4. Press the + and – buttons to scan the list of title characters.

- Press once to scan one at a time. Press and hold to scan quickly.
- You can choose from the following characters:



- If you choose the flashing dot character, nothing will be recorded at this position.
 - You can erase all the characters at and to the right of the cursor by pressing the C. RESET button.
5. When the character you want is displayed, press the NEXT button again to move the cursor to the point where you want to write the next character.
 6. Repeat steps 4 and 5 until your title is complete, then press the TITLE button to enter the title in the memory.

Note:

- If it takes you more than about five minutes to write a title, the camera may turn itself off automatically before you have finished. This can be avoided by removing the cassette before you begin.

Tally Lamp and Tape Protection

Turning off the tally lamp



(see p. 22)

▶TALLY.....OFF

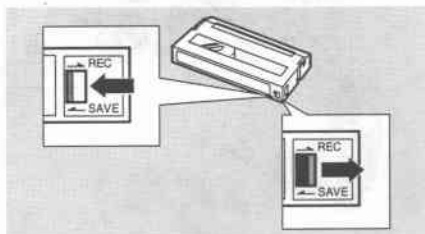
The tally lamp lets you know that the camera is recording. However, its flashing may be reflected into the lens during close-up recording, or when recording through glass.


1. Open the camera menu and point the arrow at TALLY.

2. Select the OFF setting and close the menu.

- The tally lamp no longer flashes during recording, but it will still light up when the camera receives a signal from the wireless controller.

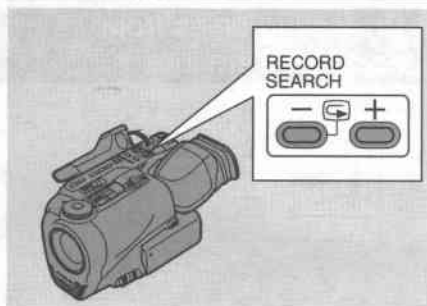
Protecting tapes from accidental erasure



To protect your recordings from accidental erasure, slide the red switch on the cassette so that it covers the hole. (This switch position is usually labelled **SAVE** or **ERASE OFF**.) When this cassette is loaded, the  mark will flash in the viewfinder if you put the camera in record pause mode.

If you want to record on the cassette again, slide the red switch back so the hole is open. (This position is usually labelled **REC** or **ERASE ON**.)

Record Search and Record Review




Record search

When the camera is in record pause mode, you can use record search to play the tape forwards or backwards to find the point where you want to start or restart recording. This is useful when you want to add a new scene to a previously used cassette. By using record search, you can ensure a smooth, noise-free join between the new scene and the old one.

1. **Make sure the camera is in record pause mode.**
2. **Press and hold the RECORD SEARCH + or – button while you check the picture in the viewfinder.**
 - The + button plays the recording forwards and the – button plays it backwards.
3. **Release the button when you find the point where you want to start recording.**
 - The camera returns to record pause mode.

Record review

When the camera is in record pause mode, you can use record review to play back the last few seconds of your recording and then return automatically to record pause mode. You can quickly make sure that a scene has recorded properly and then go on to shoot the next scene, without producing any noise in the picture.

1. **Make sure the camera is in record pause mode.**
2. **Press and release the  (record review) button while you check the picture in the viewfinder.**

- The camera rewinds the tape, plays back the last few seconds, and returns to record pause mode.

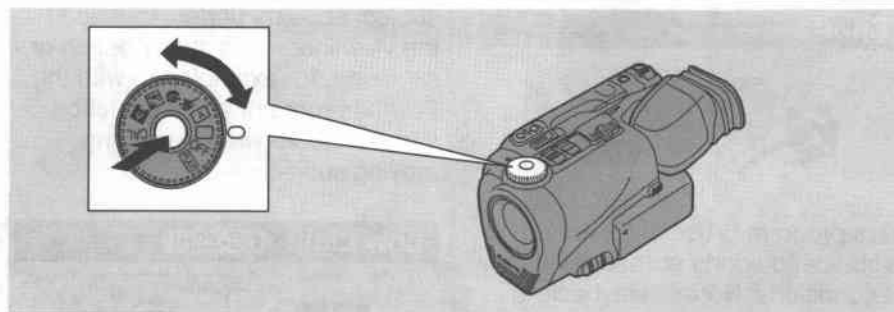


Record review can also be operated by Eye Control (see p. 49).



Note:

- Noise or skew (picture distortion) may appear on the screen during record search and record review.

Choosing a Recording Program




The camera provides you with a choice of recording programs. They use different combinations of camera settings in order to adjust the exposure and other functions to match the recording situation.

- For simple point-and-shoot operation, select the Easy Recording program. Turn the program selector to the  position.
- For normal shooting conditions, set the selector to  (Auto).
- For difficult recording conditions, the camera also has specialised AE (auto exposure) programs.

Press and hold the lock button when you move the selector from the OFF position.

Easy Recording



The simplest way to use the camera is with the program selector set to the  position. The camera will take care of focus, exposure and other adjustments, leaving you free to point and shoot.


If you select this Easy Recording program, you cannot use:

- Exposure lock or compensation
- White balance set
- Digital effects
- Digital mixer

Also, autofocus and image stabilization cannot be turned off.

Auto



In normal recording conditions, set the program selector to  (Auto). This is the same as the Easy Recording program, except that you now have the option of using any of the camera's manual functions — you can adjust focus and exposure, set the white balance, and so on.

- Choose this Auto program if you want to use the manual shutter (p. 36).

Sports



This program is useful for recording high-speed sports scenes in brightly lit conditions. Normal playback will be slightly jerky, but you will get clear images which can be analysed frame by frame during slow or still playback on a VCR.

Portrait



Use this program outdoors to make the subject stand out from a softened foreground and background. It works well for still-lives and close-ups. The effect is most noticeable when the zoom position is between the middle range and the telephoto end. Focus manually for maximum accuracy, and be careful when recording action scenes, as this program may cause fast-moving images to shudder.

Sand & Snow



Use this program in places where the background is so bright that the

subject appears underexposed in the viewfinder — a sunny beach or ski resort, for example. As with the Portrait program, you may notice some shudder when recording moving subjects.

Low Light (UC-X2Hi)



This program allows the UC-X2Hi to record in dimly lit places. It is generally best used for close-ups of slow or stationary subjects, as moving subjects may leave a trailing afterimage. However, you can take advantage of this to create special effects, by rapid zooming or by panning along with a moving subject. Picture quality will not be as good as in normal lighting conditions, and autofocus may not work as well as usual.

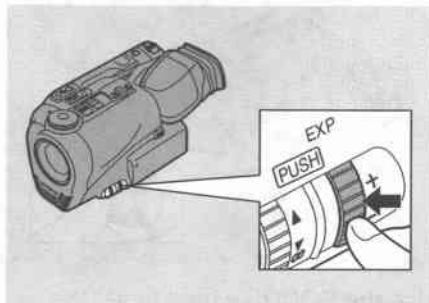
- The Overlap and Scroll functions (p. 40) cannot be used with the Low Light program.

Notes:

- Avoid changing programs during recording as the brightness of the image may change suddenly.
- The specialised AE programs are not suitable for all kinds of lighting. The image may flicker, or a bright line may appear on the screen if you use them in the wrong lighting conditions.

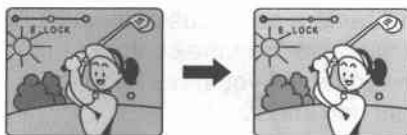
Manual Exposure Control

Exposure lock

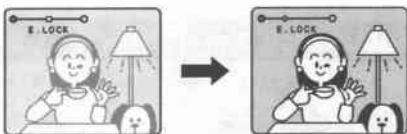


When you are recording in situations where the lighting may change suddenly, you can lock the exposure at the current level in order to control the brightness of the image.

To lock the exposure, press the EXP wheel. (The E.LOCK display appears in the viewfinder.) Press it again to return to the automatically set exposure level.

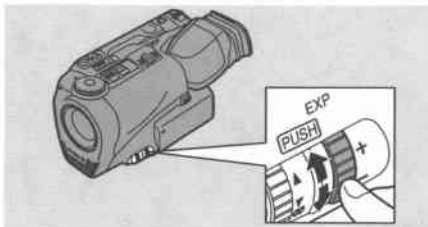


To make the recorded image brighter, turn the EXP wheel upwards (towards +). This may be necessary if the background is very bright, or if the subject is lit from behind.



To make the recorded image darker, press the EXP wheel downwards (towards -). This may be necessary if the background is very dark, or if the subject is spotlighted.

Exposure adjustment



When the exposure is locked, you can adjust it manually, making the picture brighter or darker in order to deal with difficult lighting conditions, or to manipulate the mood of the scene. The camera's iris can be manually set to any position from fully closed to fully open.

Notes:

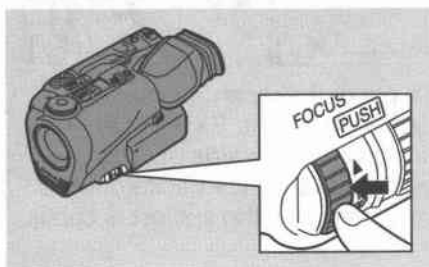
- The standard exposure level depends on which recording program you have selected.
- Exposure lock is cancelled if you change recording programs.
- You cannot use exposure lock or adjustment when the program selector is set to the ☐ (Easy Recording) position.

Manual Focus

The camera can focus automatically on whatever is in the centre of the viewfinder. All you have to do is point and shoot.

If it does not seem to be focusing well, it may be because the subject is not suitable for autofocus (see "Troubleshooting" on p. 60). In such cases, you can lock the focus or adjust it manually.

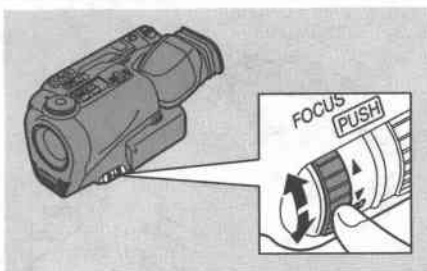
Focus lock



Press the FOCUS wheel to turn off autofocus. The focus remains locked at the point set by autofocus. (AF OFF appears in the viewfinder.) You can now adjust the focus manually. Press the FOCUS wheel again when you want to return to autofocus.

- If you zoom in on your subject after turning off autofocus, it may not stay in focus. It is generally best to adjust the zoom first, and then the focus.

Manual focus



Use the FOCUS wheel to set the focus.

- Turn it downwards (towards ∞) to move the focus further away.
- Turn it upwards to bring the focus nearer.

You can also adjust the focus without turning autofocus off — in this case autofocus will start again as soon as you release the FOCUS wheel.

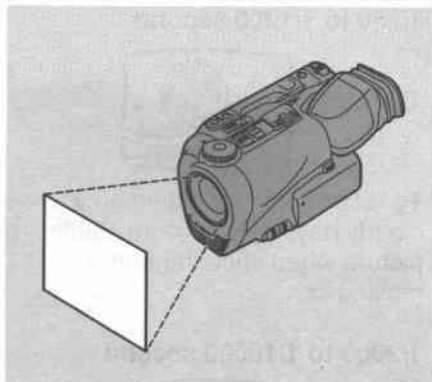


The UC-X2Hi also has eye-controlled focus, explained on p. 47.

Notes:

- The manual focus setting is cancelled if you turn the program selector to the OFF position, or if you select the ☐ (Easy Recording) program.
- When you are using the Easy Recording program, autofocus cannot be turned off, but you can override it temporarily by turning the FOCUS wheel.

White Balance



The camera's auto white balance system compensates for a wide range of lighting conditions. Although slight variations are unavoidable, colours will appear natural in virtually every situation.

In some cases, you will get better results by setting the white balance manually.

Setting the white balance



(see p. 22)

▶W. BALANCE***SET

1. **Open the camera menu and point the arrow at W. BALANCE.**
2. **Point the camera at a white object (such as a sheet of paper) and zoom in until it fills the viewfinder.**
3. **Select SET.**
 - The SET display flashes then remains lit.
4. **Close the menu.**
 - **WB** is displayed in the viewfinder.

Setting the white balance manually will probably work better than auto white balance when shooting:



Subjects with one dominant colour, such as sky, sea or forest.



Close-ups



In rapidly changing lighting conditions



In places lit by certain types of fluorescent or mercury vapour lights.



White balance can also be set using Eye Control (see p. 49).

Notes:

- If the lighting conditions change, reset the white balance by first returning to the AUTO setting, and then reselecting SET.
- Try to record with light from a single source. Correct white balance cannot be obtained for two types of lighting at once.
- You cannot set the white balance manually when the program selector is set to the ☐ (Easy Recording) program.
- When the program selector is set to the ☐ (Easy Recording) program or OFF position, the white balance setting returns to the AUTO.
- When the STANDBY cover is closed without changing the program selector, the current white balance setting remains in memory.

Manual Shutter



(see p. 22)

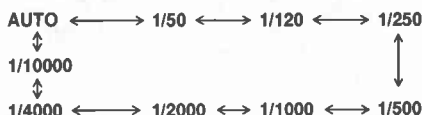
▶SHUTTER.....250

The shutter speed is usually controlled automatically, but you can also set it manually, as long as the program selector is at the **A** position.

1. Open the camera menu and point the arrow at SHUTTER.

2 Select the shutter speed you want.

- The + button selects a faster shutter speed. The – button selects a slower one:



3. Close the menu.

- The selected shutter speed is displayed in the viewfinder. There is no display when the shutter is set to AUTO.

Which shutter speed?

Select the shutter speed which suits the speed and brightness of the subject:

1/120 second



To reduce the exposure level when shooting very bright scenes, or to give more stable pictures when shooting indoor sports.

1/250 to 1/1000 second



To record outdoor action on a cloudy day, or for a more stable picture when shooting from a moving car.

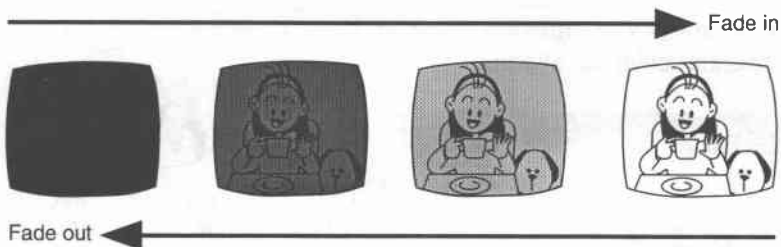
1/2000 to 1/10000 second



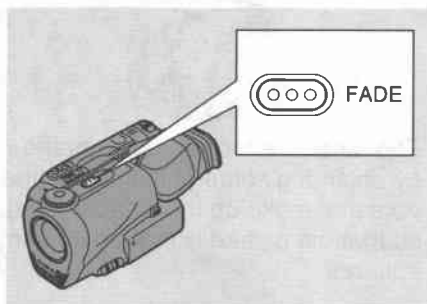
To record outdoor sports on a clear day so that you can freeze the action clearly. Normal playback will be slightly jumpy, but on a VCR with a noise-free still playback function, you will get clear images which can be analysed frame by frame.

Notes:

- The higher the shutter speed, the more light you will need.
- Make sure the sun does not appear in the viewfinder when the shutter speed is set to 1/1000 sec or faster.
- The shutter setting is cancelled if you move the program selector from the **A** position.



Manual fade



To fade in:
Press the UC-X20Hi's FADE button to make the picture and sound fade out. Start recording, then release the button to fade in.

To fade out:
At the end of the scene, press the FADE button, wait for the picture and sound to fade out, and then stop recording.

1. Open the camera menu and point the arrow at FADE-T.
2. Select the ON setting and close the menu.

Now the FADE button no longer fades the picture manually. Instead, it allows you to choose an automatic fade in/out when you start or stop recording:

1. **Press the FADE button.**
 - FADE-T flashes in the viewfinder, to show that the fade trigger is ready.
2. **Press the start/stop button.**
 - Recording begins with an automatic fade in.
 - FADE-T stops flashing. If you want an automatic fade out when you stop recording, press the FADE button again.

Fade Trigger



▶FADE-T.....ON

Use the Fade Trigger to begin and/or end recording with automatic fades.

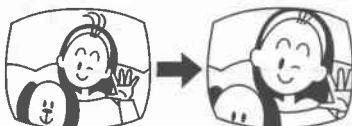
First select the Fade Trigger from the UC-X20Hi's menu:

Note:

- Title and date and time displays do not fade.

The UC-X2Hi can manipulate the recorded image in a variety of ways. The soundtrack is not affected.

Close-up



The Close-up effect produces an extra 2× magnification — it digitally enlarges the central portion of the image so that it fills the screen.

38



See p. 48 for eye-controlled Close-up.

Strobe



This effect converts on-screen action to a series of still images, giving an effect similar to slow motion.

Freeze



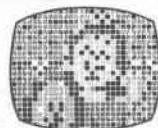
This freezes the image in the viewfinder.

Art



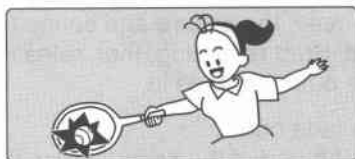
This adds a paint-like effect, called solarisation, to the image.

Mosaic

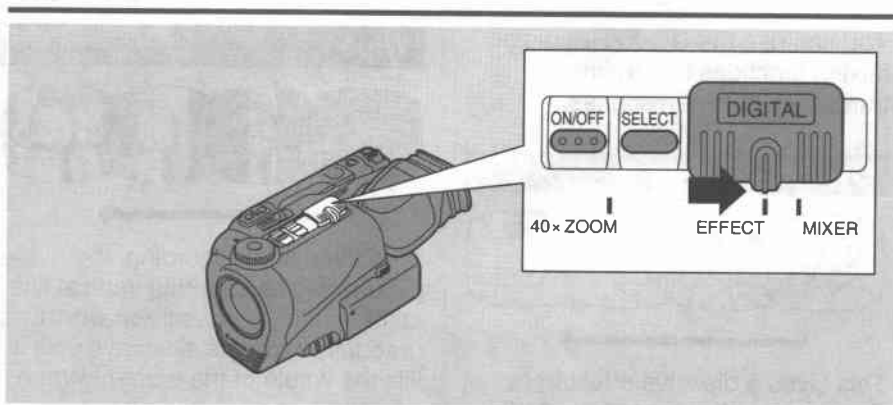


The Mosaic effect blurs the image by enlarging some of the pixels (the dots that make up the video image) so that the picture is broken up into squares.

16:9

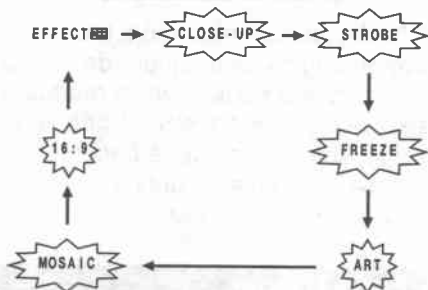


This produces images in the 16:9 format for playback on a widescreen TV.



Using digital effects

1. Slide the **DIGITAL** switch to the **EFFECT** position.
2. Press the **SELECT** button to choose the effect you want.
 - Each time you press the button, the flashing viewfinder display changes:




3. Press the **ON/OFF** button to activate the effect.
 - The viewfinder display stops flashing and appears steadily.
4. Press the **ON/OFF** button again to cancel the effect.
 - The display starts flashing again — you can now select a different effect.



Digital effects can also be operated by Eye Control (see p. 49).

Notes:

- Image quality is slightly lower when using digital effects.
- Pictures recorded in the 16:9 format will be compressed sideways if played back on a normal TV.
- For 16:9 playback, set your TV to widescreen mode manually.
- You cannot use digital effects when the program selector is set to the  (Easy Recording) program.

Digital Mixing

UC-X2Hi

You can use the UC-X2Hi's digital mixing functions to vary the transitions between scenes.

Overlap



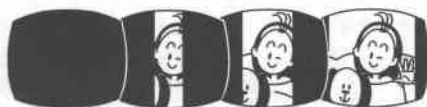
This gives a dissolve effect from one scene to the next. Activate this function while recording the first scene. When you pause and restart recording, the end of the first scene is displayed in the viewfinder as a still image and gradually dissolves into the second scene.

Scroll



Like the Overlap function, this must be activated while recording the first of the two scenes. When you pause and restart recording, the last frame of the first scene is displayed as a still image. It then scrolls off the screen, from left to right and is replaced by the second scene.

Wipe



When you start recording, the picture begins as a thin vertical line in the center of the screen which gradually expands sideways until it fills the whole of the screen. When you end a scene, the image is wiped from the screen from either side.

Window

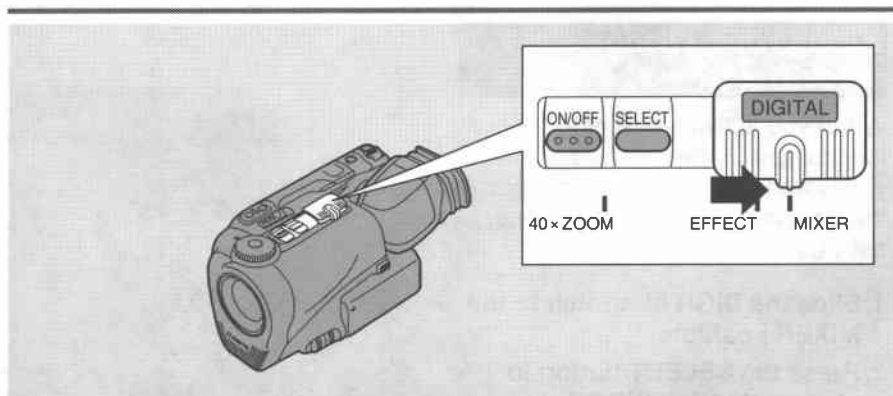


When you start recording, the image begins as a square dot in the centre of the screen which gradually expands to normal size. When you end a scene, the image becomes smaller and smaller until it disappears altogether.

Fade Trigger



When you start recording, the scene gradually fades in from a black screen. When you stop recording, it gradually fades out.



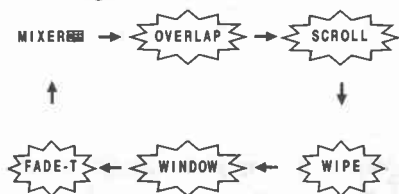
Using Overlap and Scroll

Activate Overlap or Scroll while you are recording. You will see the result when you pause and then restart recording.

1. Slide the DIGITAL switch to the MIXER position.

2. Press the SELECT button to choose OVERLAP or SCROLL.

- Each time you press the button, the flashing viewfinder display changes:



3. Start recording.

4. Press the ON/OFF button to activate the function.

- The viewfinder display stops flashing and appears steadily.

5. Pause, and then restart recording.

- The end of the first scene reappears in the viewfinder, and is replaced by the second.
- Sound recording is not affected.
- The display starts flashing again — you can now select a different mixing function.

Note:

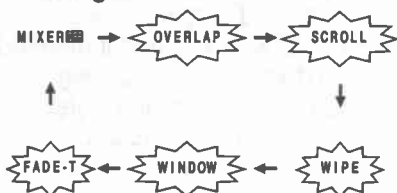
- Overlap and Scroll cannot be used with the Low Light program.

Using Wipe, Window and Fade Trigger

When you activate one of these functions, it operates only once. If you want to use a function at both the beginning and end of a scene, activate it twice.

1. Slide the **DIGITAL** switch to the **MIXER** position.
2. Press the **SELECT** button to choose **WIPE**, **WINDOW** or **FADE-T**.

- Each time you press the button, the flashing viewfinder display changes:



3. Press the **ON/OFF** button to activate the function.
 - The viewfinder display stops flashing and appears steadily.
4. **Start or stop recording.**
 - The sound and image gradually appear or disappear.
 - The REC display flashes while they are disappearing.
 - The digital mixer display starts flashing again — you can now select a different mixing function.



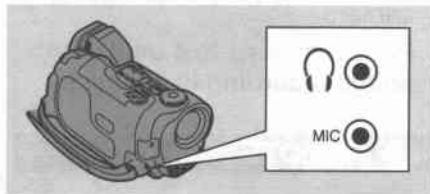
Digital mixing functions can also be operated by Eye Control (see p. 49).

Notes:


- You can see a preview of any of these functions (without actually recording) by removing the cassette before you begin.
- You cannot use the digital mixer when the program selector is set to the ☐ (Easy Recording) position.

Audio Recording and Playback

Headphones and external microphone



For greater creative control over audio recording, you can connect an external microphone to the camera's MIC terminal.

You can monitor the sound while recording by attaching stereo headphones to the camera's  terminal.

Wind screen



(see p. 22)

► WIND SCREEN • OFF

The camera has an automatic wind screen to prevent wind noise from interfering with the soundtrack. (It does not operate with an external microphone.) Turn it off when you want the microphone to be as sensitive as possible.

1. Open the recording menu and point the arrow at WIND SCREEN.

2. Select the OFF setting and close the menu.

- WS **OFF** is displayed in the viewfinder.

Bilingual playback



(see p. 22)

► BILINGUAL ••• MAIN

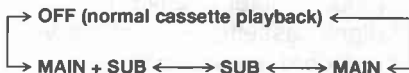
Certain video cassettes have two separate soundtracks, recorded in two different languages. The camera allows you to play back both of these soundtracks.

You do not need to use this function for normal stereo or mono playback.

1. Open the playback menu and point the arrow at BILINGUAL.

2. Select the setting you want.

- Each time you press the + or - button, the display changes as follows:



The MAIN setting plays back the main recording. The SUB setting plays back the sub-recording, and the MAIN + SUB setting plays back both together (the main recording on the left channel, and the sub-recording on the right channel).

3. Close the menu.

- The bilingual soundtrack setting is displayed in the viewfinder.

Note:

- The bilingual playback setting is cancelled if you turn the camera off.

Editing to a VCR

By connecting the camera to another VCR, you can edit your recordings to create your own video production.

Preparations



MENU

(see p. 22)

▶ EDIT ON

1. Connect the camera to the VCR.

- See "Playback Connection" on p. 16.

2. Prepare the TV and VCR.

- Turn on the TV and set it to the video channel, or set the TV/VIDEO selector to VIDEO.
- Turn on the VCR, and set its input selector to LINE. Load a blank cassette, and put the VCR in record pause mode.
- See your TV and VCR instruction manuals for details.

3. Set the camera's program selector to **PLAY**, and load your recorded cassette.

4. Open the playback menu and point the arrow at EDIT.

5. Select the ON setting and close the menu.

Basic editing

1. Find a point on your recorded cassette slightly ahead of the section you want to copy.

2. Start to play it back while you monitor the picture on the TV.

3. Start recording on the VCR as soon as the section you want to copy appears on the screen.


4. Pause the VCR at the end of the section you want to copy, then stop playback on the camera.

5. Repeat steps 1 to 4 until your edited recording is complete.




REMOTE terminal



The  REMOTE terminal allows you to connect the camera to equipment such as the VE-100 Video Editor (p. 56). Some buttons on other editing equipment may operate differently from those on the camera.

Notes:

- Select the edit mode when the camera is being used as a playback deck during editing. Keep it turned off at all other times. (It is cancelled automatically when you turn the camera off.)
- The quality of the edited tape will be slightly lower than that of the original.
-  (LANC) is a trademark. It stands for Local Application Control Bus System.

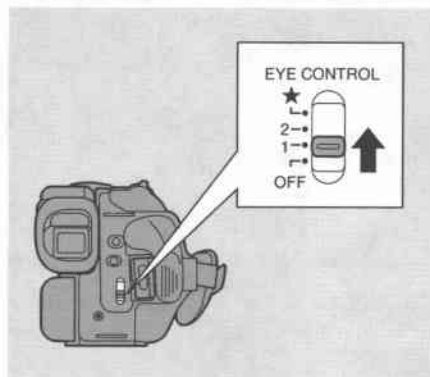
Before You Use Eye Control

UC-X2Hi

Before using Eye Control, you must set the EYE CONTROL switch.

The first time you use Eye Control, you must also calibrate the camera.

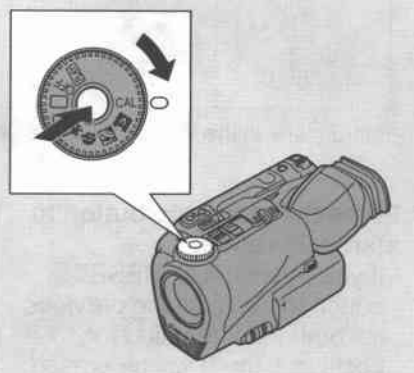
Setting the EYE CONTROL switch



Before using Eye Control, set the EYE CONTROL switch to 1 or 2. This is now your own Eye Control number. When you calibrate the camera, and every time you use Eye Control, set the EYE CONTROL switch to the same position. Nobody else should use the camera with the switch at your setting.

- For people who will not use the camera very often, set the EYE CONTROL switch to ★, the guest position. Each time the camera is calibrated at the ★ setting, it cancels the previous ★ calibration automatically.

Calibration



As different people have different eye characteristics, the camera has to learn about your eyes before it can interpret their movements accurately. The process of teaching the camera about your eyes is called calibration. You can calibrate the camera as often as you like. The more often you do so, the more accurate it will become.

The camera itself will guide you through the calibration procedure, but you should also read the instructions below for more detailed information.

1. Set the program selector to CAL.

- The calibration display appears in the viewfinder.

2. Set the EYE CONTROL switch to 1 (or 2).

- See "Setting the EYE CONTROL switch," on this page.

3. Put your eye to the viewfinder.

- Do not move your eye away from the viewfinder during calibration.



Instructions in the viewfinder guide you through the calibration procedure.

4. Press the start/stop button to start calibration.

- If you press the C. RESET button instead, all the previous calibration information for position 1 (or 2) will be erased.
- This step is not necessary if you use the ★ setting.

5. Look at the yellow dot, and press the start/stop button again.

- Keep looking until it stops flashing.
- If TRY AGAIN flashes in the viewfinder, you will have to start again.

6. Look at the next yellow dot and press the start/stop button one more time.

- Keep looking until it stops flashing.
- If TRY AGAIN flashes in the viewfinder, you will have to start again.

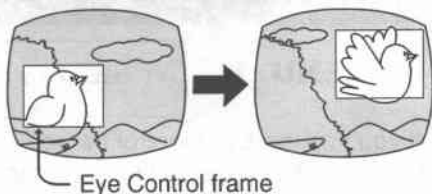
7. Set the program selector to one of the recording programs.

- You are now ready to use Eye Control.

Notes:

- If Eye Control does not seem to be working well, try calibrating the camera again (without cancelling your previous calibration). Refer to "Troubleshooting" on p. 60 for more information.
- If you sometimes wear glasses, you might want to use both positions 1 and 2 yourself. Use one position when you are wearing glasses, and the other when you are not wearing them.

Using the Eye Control frame



The camera can tell which part of the viewfinder screen you are looking at. This means it can automatically adjust the focus to suit the important part of the scene.

The Eye Control frame follows your eye around the viewfinder, and the camera adjusts the focus to suit whatever is inside the frame. It also measures the brightness of the frame area in order to calculate the exposure more precisely.

Be sure to calibrate the camera before using Eye Control for the first time (see p. 45).

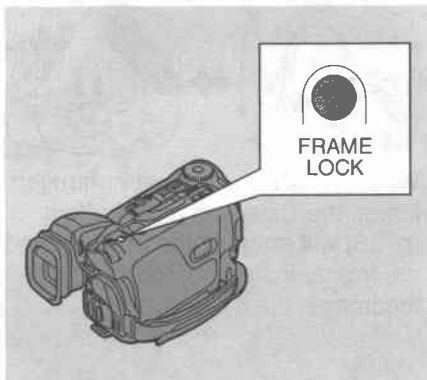
1. Set the **EYE CONTROL** switch.

- See p. 45.
- The Eye Control frame appears in the viewfinder.

2. Look at the subject in the viewfinder.

- The frame follows your eye and positions itself over the subject. The camera adjusts the focus to suit the area inside the frame.

Frame lock



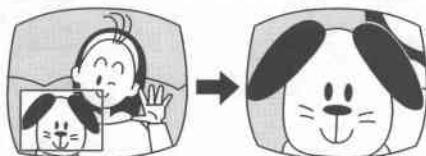
When you have positioned the Eye Control frame by looking at your subject, you can lock the frame at this point by pressing the **FRAME LOCK** button.

This is useful for two reasons:

- If your subject is stationary, you do not have to keep looking at it.
- You can now operate other eye-controlled functions (see p. 49).

Press the button again to unlock the frame.

Eye-controlled Close-up



When you are using eye-controlled focus, the Close-up digital effect (p. 38) will magnify the area around the frame, instead of the centre of the image.

To hide the Eye Control frame



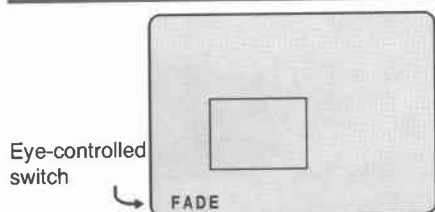
▶AF FRAME•••OFF

If you find the Eye Control frame unnecessary or distracting, you can make it invisible. Eye-controlled focus will continue to operate as before, but you will not see the frame.

1. Open the camera menu and point the arrow at **AF FRAME**.
2. Select the **OFF** setting and close the menu.

Notes:

- If you take your eye away from the viewfinder, the frame returns to the centre of the screen (unless you are using frame lock).
- If you use Freeze or Close-up effects (p. 38), the frame position is automatically locked, and it disappears from the viewfinder.



When you lock the Eye Control frame by pressing the FRAME LOCK button (p. 47), an eye-controlled switch appears in the viewfinder.

Choosing a switch



The following functions can be controlled using eye-controlled switches:

- ① Fadep. 37
- ② Date/timep. 24
- ③ Titlep. 27
- ④ Record review (⏮)p. 30
- ⑤ Record start/stopp. 6
- ⑥ White balancep. 35
- ⑦ Digital effects and mixing functionsp. 38, 40

Only one of these functions is available at a time. To choose the one you want to use:

1. Press and hold the FRAME LOCK button.

- After three seconds, the list of switches appears in the viewfinder. The arrow moves down the list one by one.

2. Release the button when the arrow is pointing at the switch you want to use.

- The selected switch will appear when you lock the Eye Control frame.

Operating the switches

When your chosen switch appears in the viewfinder, you can operate it simply by looking at it. The switch flashes to show that the camera has understood your command.

Eye-controlled fade

Keep looking at FADE until the picture fades out. Look away from it to fade in.

Unlike the Fade Trigger effect, eye-controlled fade can be operated at any time, not just at the beginning and end of a scene.

Date and time display

Look at DATE to turn the date and/or time display on or off.

Title display

Look at TITLE to turn the title display on or off.

Record review

Pause recording and look at ⏮ to operate record review.

Recording start/stop

Look at START/STOP to start or stop recording.

White balance

Look at WB SET to set the white balance. Look at it again to return to auto white balance.

Either AUTO or SET is highlighted to show whether auto or manual white balance is selected.

Digital effects and mixing functions

The name of the currently selected effect or mixing function appears in the viewfinder. Look at it to activate it.

To turn off the switches



(see p. 22)

►EYE SWITCH••OFF

You can turn off the eye-controlled switches if you do not want a switch to appear whenever you use frame lock.

1. Open the camera menu and point the arrow at EYE SWITCH.

2. Select the OFF setting and close the menu.

- Now the eye-controlled switches cannot be used.
- When you lock the Eye Control frame, FRAME LOCK will appear in the viewfinder.

Notes:

- The switches are normally yellow, but appear blue when the selected function is not available.
- The camera remembers which switch you selected, but it does not automatically return to the switch screen the next time you turn it on. It always begins with the Eye Control frame.
- When an eye-controlled switch is displayed, the normal viewfinder indications disappear, and the following controls cannot be used:
 - Autofocus on/off
 - Exposure lock and adjustment
 - Digital effects and mixing functions

Making Better Videos

Holding the camera



For maximum stability, place your right hand through the grip belt and keep your right elbow pressed against your body. Rest your left hand lightly on the side of the camera. With practice, you will be able to operate the controls by touch, without taking your eye off the action.

Using a tripod



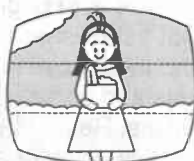
To prevent any unwanted movement, you can mount the camera on a tripod, and operate it with the wireless controller.

- When you are using a tripod, be careful not to leave the viewfinder exposed to bright sunlight or it may melt. (The light is concentrated by the viewfinder lens.)
- Make sure that the fastening screw of the tripod is no longer than 5.5 mm (3/16 inch), or it will damage the camera.

Composition



The most important element in the scene does not have to be in the centre. For a more interesting picture, try to position your subject so it is slightly to one side. Leave some space on the side of the frame that the subject is facing or moving towards.



Don't cut off the top of the subject's head, and don't cut people off at the neck, hips or knees (move a little bit above or below).



Watch out for distracting objects in the background.

Picture angle



Long shot



Medium shot

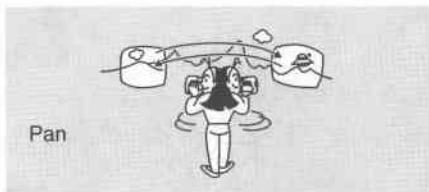


Close-up

Instead of zooming while recording, try to choose your picture angle before you begin. A good way to tell a story with video is to begin with a long shot that establishes the situation, and then move in with medium shots and close-ups to show the details. Remember to change your viewpoint for each shot.

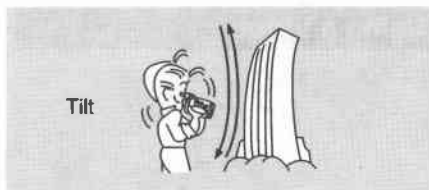
Any camera movement, or change in picture angle, should have a definite purpose. Avoid unnecessary or half-hearted movements.

Camera moves



Pan

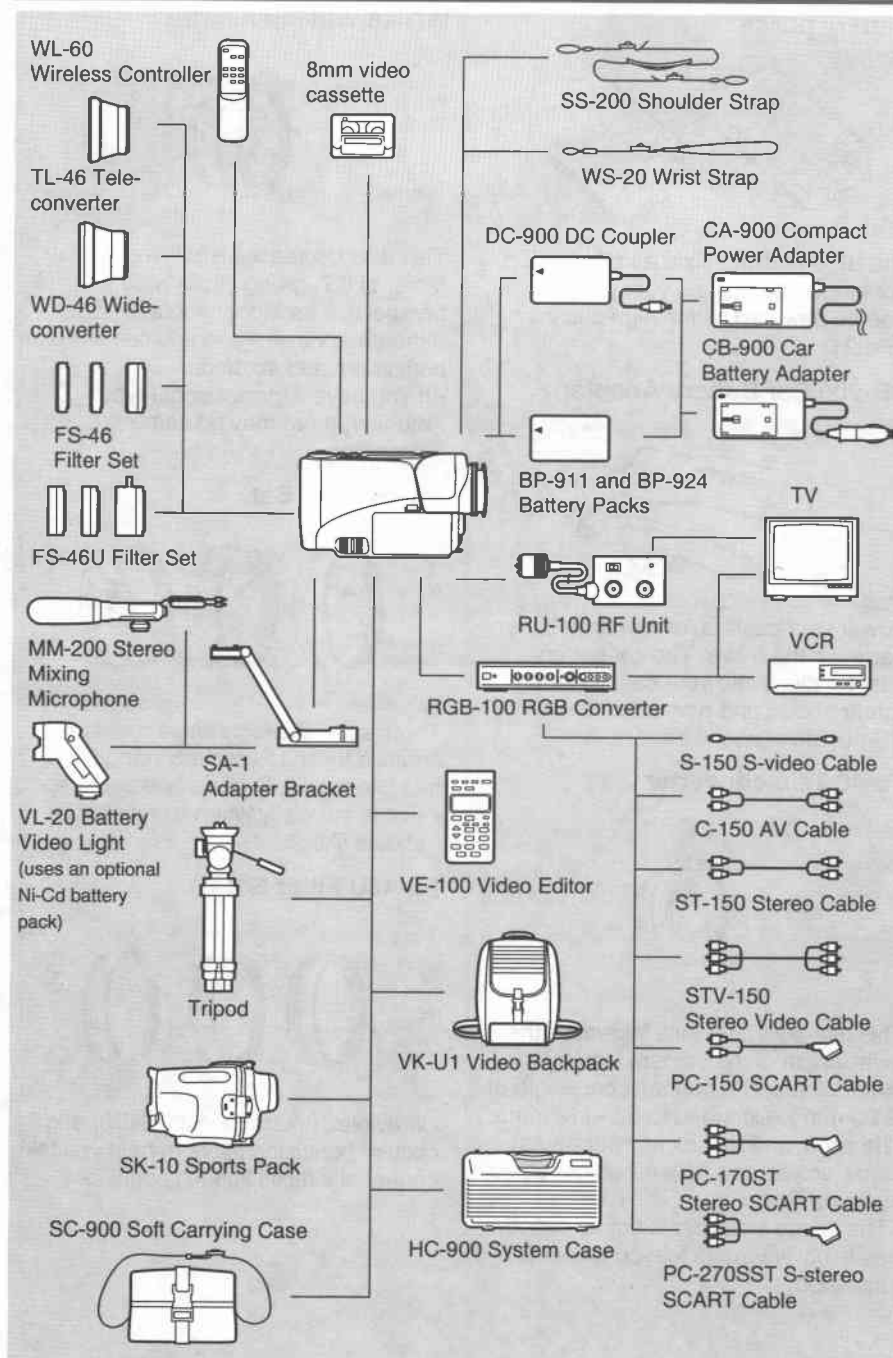
Use pans to record a landscape or follow a moving subject. Decide the area you want to cover and stand facing the end of your panning angle. Without moving your feet, turn your waist to the starting position. Start recording, and after a few seconds begin to turn slowly from the waist. Hold the final image for a few seconds before you stop recording.



Tilt

Tilt the camera up to exaggerate the height of the subject. Tilt down from the top of a building, for example, as an introduction to subjects at the bottom.

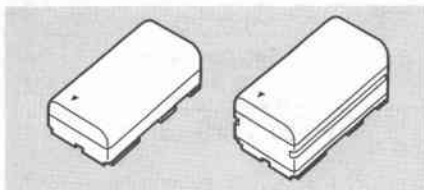
Video System



(Availability differs from area to area.)

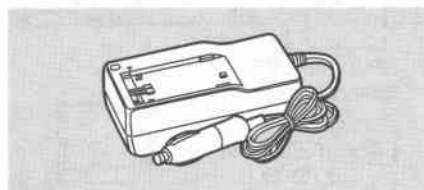
Optional Accessories

Battery packs



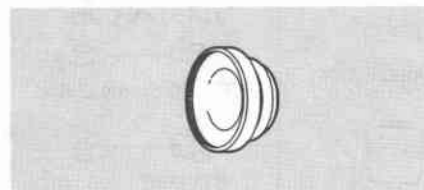
The BP-911 is supplied as standard. For longer recordings, your camera can also be powered by the high-capacity BP-924.

CB-900 Car Battery Adapter



Power your camera, or recharge battery packs on the move. The car battery adapter plugs into your car's cigarette lighter socket and runs off a 12–24 V DC negative ground battery.

TL-46 Tele-converter



This tele-converter lens increases the focal length of the camera lens by a factor of 1.4. The normal focal length of 4–80 mm is extended to 5.6–112 mm. The zoom and autofocus operate as usual, so you can take full advantage of the extra range.

- The image stabilizer is not as effective as usual when the tele-converter is attached.

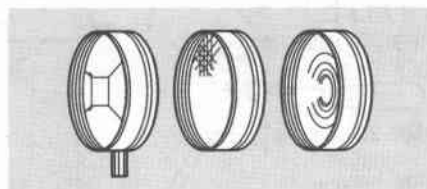
WD-46 Wide-converter



This lens decreases focal length by a factor of 0.7, giving you a wide perspective for indoor shots or panoramic views—and you can still use both zoom and autofocus.

- If you have a 'professional-type' monitor, there may be some vignetting.

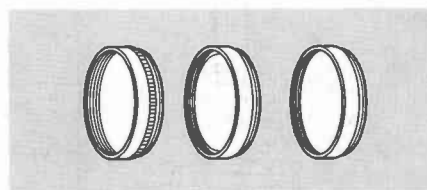
FS-46 Filter Set



Three special effects filters to add a creative touch to your recordings: multiple-image, R-cross and zoom-spot.

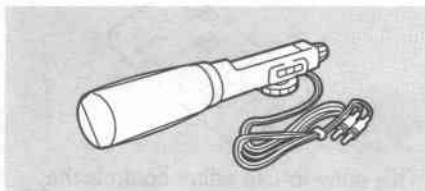
- Focus manually when using special effects filters.

FS-46U Filter Set



Ultraviolet, neutral density (ND8) and circular polarising filters to help you take control of difficult lighting conditions.

MM-200 Stereo Mixing Microphone



The MM-200 mixes live sound and music, so you can create the ideal soundtrack for your video productions.

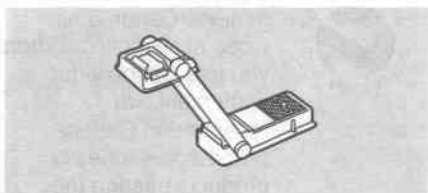
VL-20 Battery Video Light



This powerful 20 W video light can be used for both indoor and outdoor shooting. There are no cables — an optional Ni-Cd battery pack fits neatly inside.

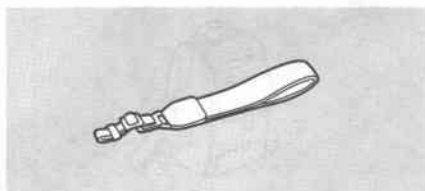
- The VL-20 uses Ni-Cd battery packs. To charge them, you will need an optional adapter.

SA-1 Adapter Bracket



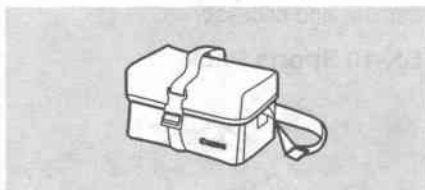
Attaches a video light or microphone securely to the camera.

WS-20 Wrist Strap



Provides an extra measure of protection for active shooting.

SC-900 Soft Carrying Case



This lightweight bag keeps the camera within easy reach without weighing you down or getting in the way.

HC-900 System Case



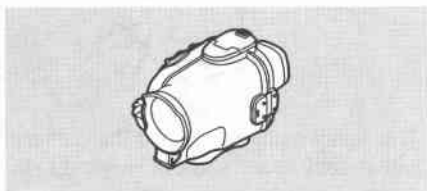
This solid, lockable case provides safe and stylish protection for the camera and accessories during transportation and storage.

VK-U1 Video Backpack



With this rugged go-anywhere backpack, you'll never have to leave your camera behind. It has a full-length zip to give you instant access to the camera and accessories.

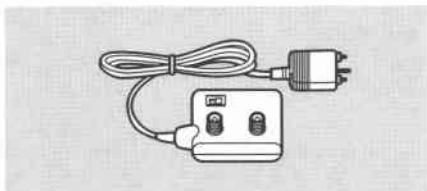
SK-10 Sports Pack



Completely waterproof your camera, while retaining control of its important functions. You can freely record active holidays at the beach, or on the ski slopes.

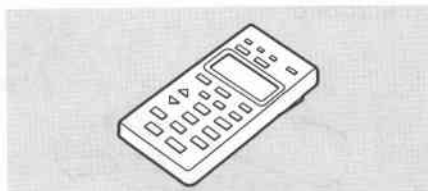
- The sports pack can be used underwater at depths of up to 3 metres. For safety reasons, it is designed to float, so it is best used close to the surface.


RU-100 RF Unit



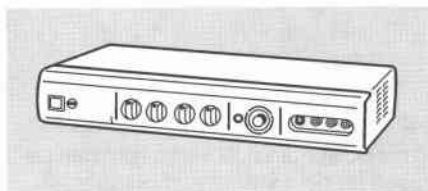
This optional converter allows the camera to be connected to the aerial terminal of any TV. It can be a useful accessory while travelling, as you may need it if you want to connect the camera to a TV in your hotel room.

VE-100 Video Editor



This easy-to-use editor controls the camera and a video recorder simultaneously for fast, accurate assembly editing. Not only does it link up to any  (LANC) terminal, it can also learn the remote control signals used by most VCRs.

RGB-100 RGB Converter



Even without an S-video input, you can appreciate the difference Hi8 makes — the RGB-100 converts the camera's S-video signal to RGB, and links up with your TV's SCART terminal.



This mark identifies genuine Canon 8mm video accessories. When you use Canon video equipment, we recommend Canon-brand accessories or products bearing the same mark.

Cautions and Maintenance

Cautions

Avoid high temperatures and high humidity.

- Do not leave the camera inside a car in hot weather, for example.
- Be careful of heat radiating from video lighting equipment.
- Do not take the camera into a humid room.

Avoid sudden changes in temperature.

- If you take the camera from a cold place to a warm place, condensation may form on the lens and internal parts (see p. 59).

Do not point the lens or viewfinder at strong light sources.

- Never point it at the sun, and do not leave it aimed at a bright subject.
- Be especially careful when leaving the camera on a tripod.

Avoid magnetic or electric fields.

- Do not use the camera close to TV transmitters, portable communication devices or other sources of electric or magnetic radiation. They may cause picture interference, or permanently damage the camera.

Do not expose the camera to water.

- Cover the camera when you are recording in rain or mist.
- There is a risk of electric shock if water gets inside the camera — contact qualified service personnel as soon as possible.

Protect the lens.

- Sand and dust can damage the camera, especially the lens — be especially careful on windy days.

Handle the camera gently.

- Vibration or shock can cause damage.
- Do not use the viewfinder as a carrying handle.

Do not disassemble the camera.

- This is very dangerous as there is a risk of electric shock — if the camera does not function properly, take it to qualified service personnel.

Storage

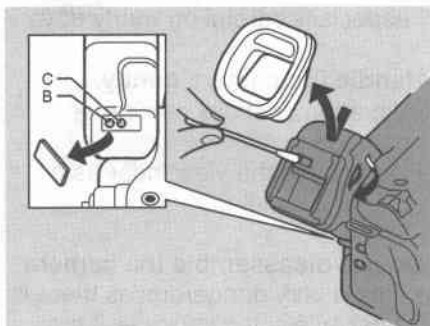
If you do not intend to use the camera for some time, remove the tape and battery pack, and store it in an area which is free of dust and moisture, and where the temperature is no higher than 30°C (86°F). After storage, check each part and function of your camera to make sure everything is still working properly.

Note:

- These cautions also apply to accessories such as battery packs and cassettes.

Maintenance

Viewfinder



- To clean the viewfinder screen, remove the rubber eyecup and turn the viewfinder focusing wheel in the direction of the arrow until it stops. Insert a dry cotton swab as shown, and carefully wipe the screen (located at the top of the viewfinder).
- The viewfinder picture can be adjusted when necessary by peeling off the cover on the side of the viewfinder, and turning the screws marked B (brightness) and C (colour).

Camera body and lens

- Use a soft, dry cloth to clean the camera body or lens. Never use chemically treated cloth or volatile solvents such as paint thinner.

Video heads

- Clean the video heads only when necessary, preferably using Canon's CC-8 Video Head Cleaning Cassette.
- Do not use a wet-type cleaning cassette, as this can cause damage.

Using the camera abroad

Power sources

- You can use the compact power adapter to operate your camera and charge battery packs in any country where the electricity supply is between 100 and 240 V AC, 50/60 Hz. Make sure you have an appropriate plug adapter, if one is needed for the country you are visiting.

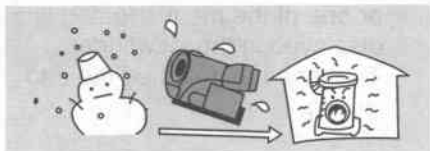
TV playback

- Although you can always play back your recordings in the viewfinder, your camera can only be connected to TVs which use its PAL system. This TV system is used in the following countries: Algeria, Australia, Austria, Bangladesh, Belgium, Brunei, China, Denmark, Finland, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Jordan, Kenya, Kuwait, Liberia, Malaysia, Malta, Mozambique, the Netherlands, New Zealand, North Korea, Norway, Oman, Pakistan, Portugal, Qatar, Sierra Leone, Singapore, South Africa, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Tanzania, Thailand, Turkey, Uganda, United Arab Emirates, United Kingdom, Uruguay, Yemen, former Yugoslavia, Zambia.

Condensation

Condensation may form on the camera when it is moved from a cold place to a warm place. Using the camera while condensation is present can damage both the tape and the camera.

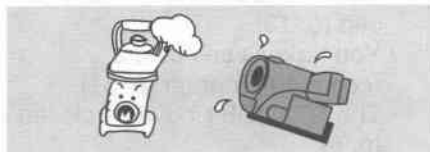
Condensation may become a problem:



When you bring the camera from a cold place to a warm room



When a cold room is heated rapidly



When the camera is left in a humid room




When the camera is taken from an air-conditioned room to a warm, humid place

Protecting the camera from condensation

- Before you bring the camera to a warm or humid place where condensation is likely to be a problem, unload the cassette and put the camera in a plastic bag. Wait until the camera reaches room temperature before you take it out of the bag.

What happens when condensation is detected

- The operation indicator flashes and the  mark flashes in the viewfinder. If there is a cassette in the camera, it stops automatically and EJECT flashes in the viewfinder.
- The camera may not detect the condensation immediately — the condensation warning may not start flashing for 10 to 15 minutes.
- You cannot load a cassette when condensation is detected.

What you should do

- Remove the cassette, leave the cassette compartment open, and turn the camera off.
- Leave it in a dry place until the condensation evaporates. After the condensation warning stops flashing, wait at least another hour before trying to use the camera.

Troubleshooting



Refer to this checklist first if you have any problems with your camera. Possible explanations are given below each problem on the list — turn to the page numbers in brackets for more information.

Make sure that the camera is properly connected if you are using it with a TV or VCR. Consult your dealer or service outlet if problems persist.

? The camera won't turn on.

- The battery pack is exhausted, or not properly attached (p. 8).

? The operation indicator is flashing.

- Check the viewfinder displays (p. 63).

? The start/stop button doesn't work.

- You haven't selected a recording program (p. 31).
- You haven't loaded a cassette, or it is set for erasure prevention (p. 12, 29).

? Nothing happens when I press the buttons.

- You haven't turned the camera on (p. 6, 14).
- You haven't loaded a cassette (p. 12).
- The battery pack is exhausted, or not properly attached (p. 8).
- You have selected the Easy Recording program (p. 31).
- An eye-controlled switch (p. 49) or one of the menus (p. 22) is displayed in the viewfinder.
- The tape has reached the end (p. 12).

? The camera turned itself off.

- You left it in record pause mode for more than about five minutes (p. 7).
- The battery pack is exhausted (p. 8).

? There's no picture in the viewfinder.

- You haven't taken off the lens cap (p. 13).
- You haven't selected a recording program (p. 31).
- The STANDBY cover is closed (p. 6).

? The camera doesn't remember the date and time (or other settings) when it's turned off.

- You haven't installed the backup battery (p. 11).

? The camera won't focus.

- The viewfinder lens needs adjusting (p. 13).
- The lens is dirty (p. 58).
- Autofocus (or eye-controlled focus) is turned off (p. 34, 47).
- Eye-controlled focus is not set properly (p. 45, 62).
- Some subjects are not suitable for autofocus. In the following situations, you will often get better results using manual focus (p. 34).



Rapidly moving subjects



Subjects with horizontal stripes



Subjects without much contrast (such as a white wall)



Subjects behind wet or dirty glass



Subjects which reflect too much light (such as shiny car exteriors)



Dark subjects



Night scenes

? The wireless controller doesn't work.

- The remote sensor is turned off (p. 23).
- The batteries are exhausted (p. 23).

? The tally lamp doesn't flash.

- It is turned off (p. 29).

? The digital functions (zoom, effects or mixer) don't work.

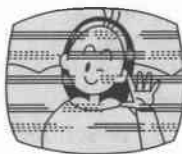
- You can only use one type of digital function at a time. Make sure the DIGITAL switch is set properly (p. 20, 38, 40).
- Digital effects and mixing functions cannot be used if you have selected the Easy Recording program (p. 31).

? The PLAY ► button doesn't work.

- The program selector isn't set to **PLAY** (p. 14).
- You haven't loaded a cassette (p. 12).
- The tape has reached the end (p. 12).

? The playback picture is rough.

- If your recordings do not play back smoothly, clean the video heads (p. 58).



? There's no picture on the TV screen, even though the tape is moving.

- The video heads need cleaning (p. 58).
- The TV/VIDEO selector on the TV isn't set to VIDEO (p. 16).
- If the camera is connected using the RF unit, you haven't selected the video channel (p. 19).

? The soundtrack doesn't play back properly.

- You have selected a bilingual playback setting (p. 43).

? Eye Control doesn't work.

- You haven't set the EYE CONTROL switch (p. 45).
- You haven't calibrated the camera (see p. 45 and below).
- Conditions have changed between calibrating the camera and using Eye Control. If there is a change in lighting conditions (if you go outside, for example) you should calibrate the camera again, without cancelling the previous calibrations. However, a major change (such as putting on glasses) means that you should first cancel the previous calibrations by pressing the C. RESET button, as described on p. 45.
- More than one person has been using the same Eye Control number (p. 45). Calibrate the camera again, and cancel the previous calibrations.

- If the Eye Control frame does not appear in the viewfinder, it has been hidden (p. 48).
- If the eye-controlled switches do not appear in the viewfinder, they have been turned off (p. 50).

? I can't calibrate the camera

- You didn't keep your eye to the viewfinder during calibration.
- You moved the camera, or didn't hold it straight.
- You blinked, moved your eyes suddenly or didn't look straight into the viewfinder.
- The sun was shining in your eyes.
- Your hair was in your eyes.
- You were wearing mirrored or multi-coated glasses, or your glasses weren't on straight.

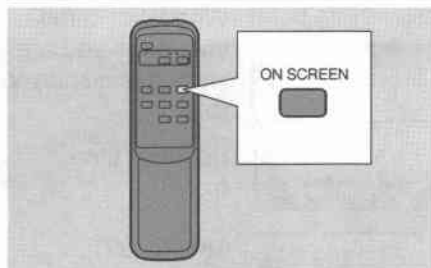
? There are air bubbles inside the lens.

- This is unlikely, but may happen if you use the camera in places where the air pressure is very low, in an aeroplane for example. The bubbles will disappear a week or so after you return the camera to normal atmospheric pressure.

? Malfunction

- External interference may cause the camera's microprocessor to malfunction temporarily. If random letters appear in the viewfinder or if normal operation is interrupted, remove and then replace the power source (and if necessary, the backup battery).

Viewfinder Displays



To display the date and time on a connected TV, press the DATE button. Press the TITLE button to see the title. The camera can record these displays just as they appear on the screen.

Press the wireless controller's ON SCREEN button to see the other viewfinder displays on the TV screen. (The displays appear white on-screen.) They will not be added to any recordings you make with the camera.



indicates a flashing display.



Record pause mode (p. 6)



Recording (p. 6)



A digital mixing function (Wipe, Window or Fade Trigger) is being used to end the scene (UC-X2Hi, p. 42).



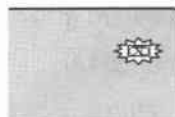
The backup battery is not properly installed, or needs replacing (p. 11).



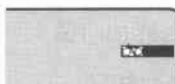
Shows how much battery power remains (p. 9).



The battery pack is exhausted (p. 9).



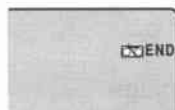
No cassette is loaded, or it is set for erasure prevention (p. 11).



This display shows how much tape remains...



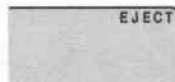
...it also counts down the last three minutes (this display does not appear during playback)...



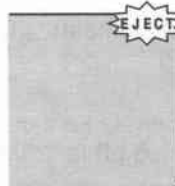
...finally, it tells you when you have completely run out of tape.



Hi8 recording or playback (p. 15)



The camera is ejecting the tape (p. 12).



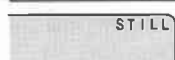
The safety mechanism is activated. Unload the cassette and turn the camera off. Turn it on again and reload the cassette.



Playback is stopped (p. 14).



Normal playback, fast forward playback, rewind playback or high-speed search (p. 14)



Still playback
(p. 14)



Fast forward (p. 14)



Rewind (p. 14)



Tape return
(forward and
reverse) (p. 15)



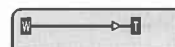
Zoom display
(p. 20):



Optical zoom



Optical plus digital
zoom (UC-X2Hi)



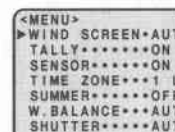
Zoom in



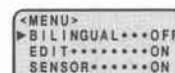
Zoom out



The image
stabilizer is turned
on (p. 21).



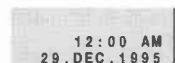
Camera menu
(p. 22)



Playback menu
(p. 22)



The remote sensor
is turned off (p. 23).



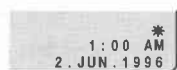
Date and time
(p. 24)



The date and time
have not been set.
This display will not
be recorded (p. 24).



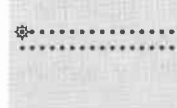
World clock: the
time zone you are
visiting is displayed
(p. 25).



Summer time
(p. 26)



Title (p. 27)



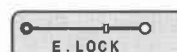
Appears when you
are writing a title
(p. 27).



Recording
programs (p. 31)



Manual exposure
display (p. 33):
Exposure locked



Brighter than
standard exposure
level



Darker than
standard exposure
level



Manual focus is
selected (p. 34).



White balance is
set manually
(p. 35).



Manually selected shutter speed (1/1000th of a second in this example) (p. 36)



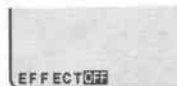
The Fade Trigger is selected (p. 37).



The Fade Trigger is ready (UC-X20Hi, p. 37).



Digital effects: the display flashes when the effect is being selected, and appears steadily when it is activated (UC-X2Hi, p. 38).



No digital effect is selected (UC-X2Hi, p. 38).



Digital mixing functions. The display flashes when the function is being selected and appears steadily when it is activated (UC-X2Hi, p. 40).



No mixing function is selected (UC-X2Hi, p. 40).



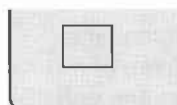
The wind screen is turned off (p. 43).



Bilingual playback (p. 43)



Eye Control calibration: the display appears when the program selector is set to CAL (UC-X2Hi, p. 45).



Eye Control frame (UC-X2Hi, p. 47)



List of eye-controlled switches (UC-X2Hi, p. 49)



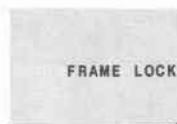
Eye-controlled switch (UC-X2Hi, p. 49)



The eye-controlled switch is being operated (UC-X2Hi, p. 49).



AUTO or SET appears highlighted next to the eye-controlled white balance switch (UC-X2Hi, p. 49).

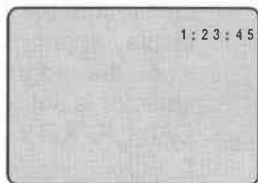


Frame lock, with the eye-controlled switches turned off (UC-X2Hi, p. 50)



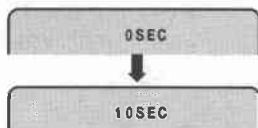
Condensation warning (p. 59)

Tape counter



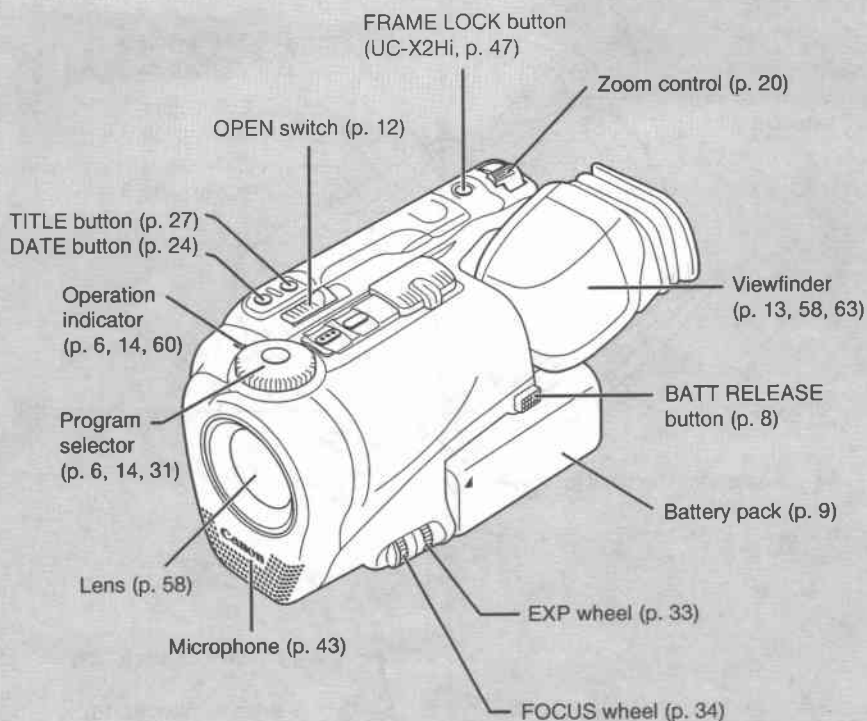
The tape counter indicates the approximate running time of the tape — 1 hour, 23 minutes and 45 seconds in this example. The tape counter is reset when a cassette is loaded, or when you press the C. RESET button (p. 15).

Recording reminder

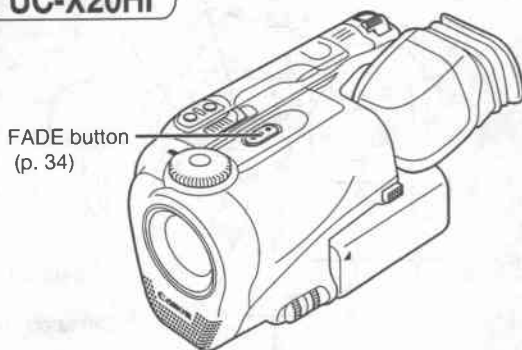


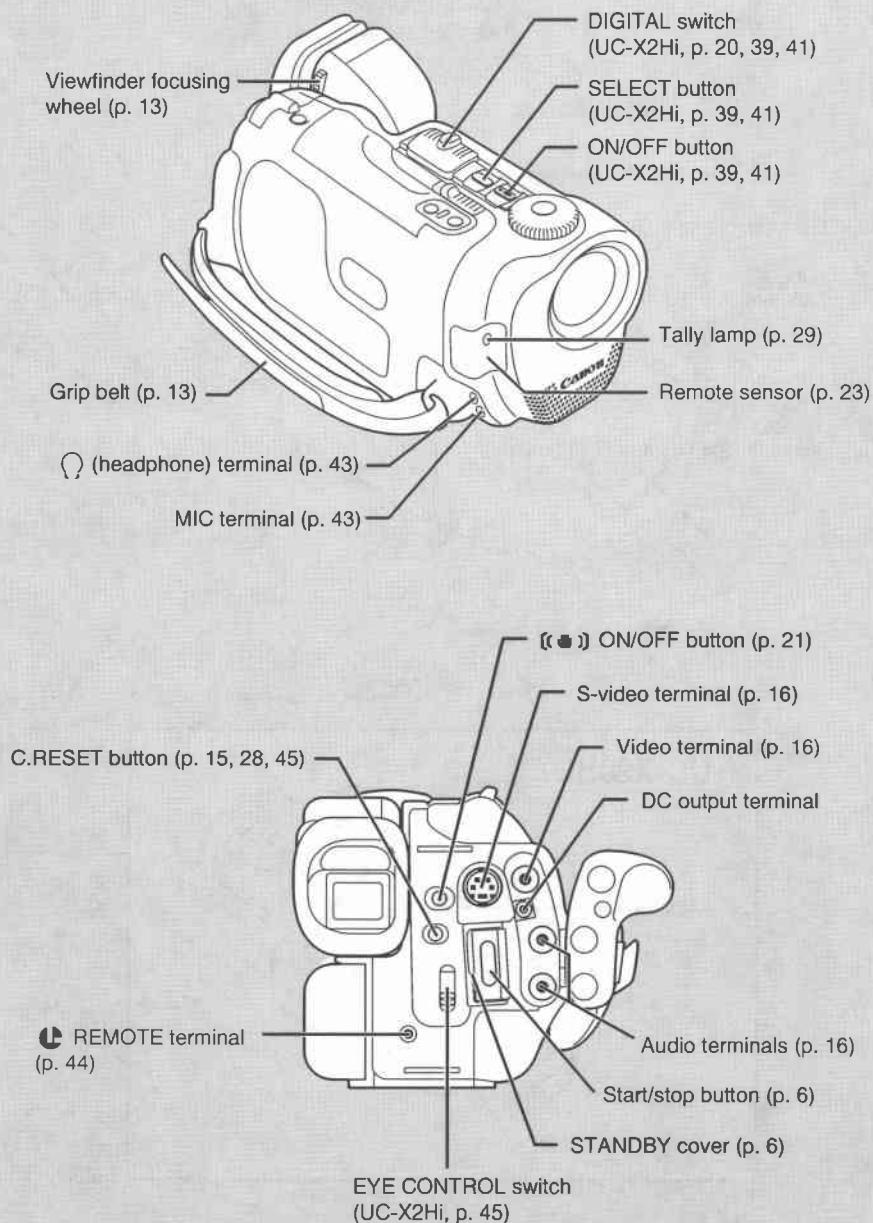
When you start recording, the camera counts from 0SEC to 10SEC. Shots which are shorter than 10 seconds may be difficult to edit later. On the other hand, if you are not planning to edit the recording, remember that a shot which does not contain action should generally last no longer than 10 seconds.

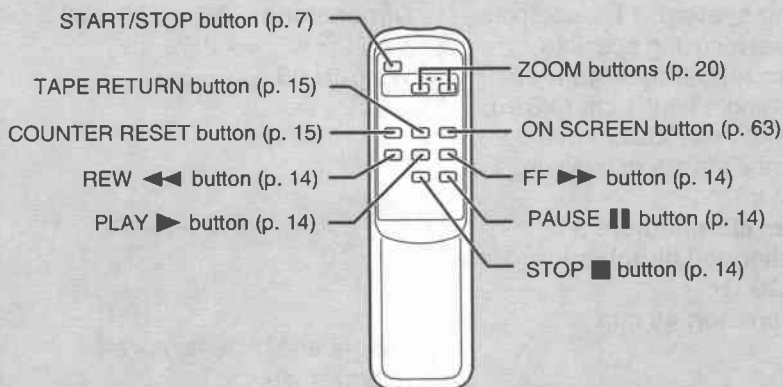
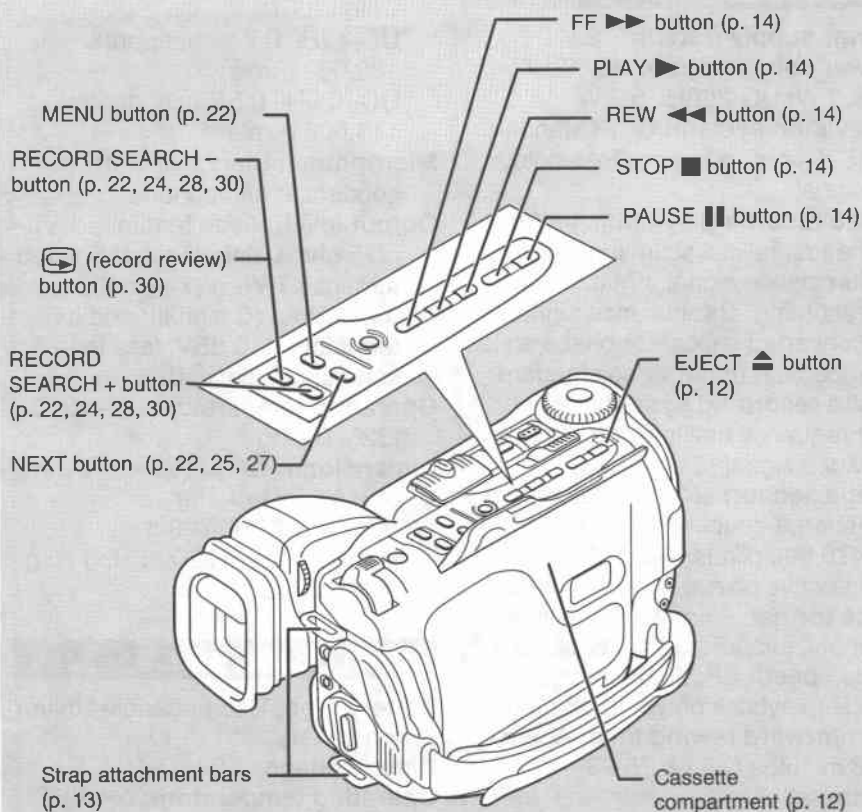
Nomenclature



UC-X20Hi







Specifications

UC-X2Hi/UC-X20Hi

Power supply (rated): 7.2 V DC

Power consumption: UC-X2Hi:
6.3 W; UC-X20Hi: 5.7 W

Television system: CCIR standard
(625 lines, 50 fields) PAL colour
signal

Video recording system: 4 rotary
heads, helical scanning system;
luminance signal: FM azimuth
recording; chrominance signal:
converted subcarrier phase shift
recording (8mm video standard)

Audio recording system:
Frequency multiplexing with the
video signal (2 channels)

Image sensor: 1/4-inch CCD
(charge-coupled device),
470,000 pixels (440,000
effective pixels)

Tape format: 8mm video cassette,
metal evaporated/metal particle

Tape speed: SP: 20.05 mm/s;
LP (playback only): 10.03 mm/s

Fast forward/rewind time: Approx.
8 minutes (with a P5-90
cassette)

Lens: f/1.6–3.6, 20× power zoom,
4–80 mm

Focusing system: TTL autofocus,
manual focusing possible

Minimum focusing distance:
Wide-angle end: 1 cm (3/8 in);
telephoto end: 80 cm (2 ft 8 in);
intermediate zoom position: 1 m
(3 ft 4 in)

Minimum illumination: 3 lx

Recommended illumination: More
than 100 lx

Filter diameter: 46 mm

Electronic viewfinder:

Colour LCD;
UC-X2Hi: 0.7 inch, approx.
180,000 pixels;
UC-X20Hi: 0.55 inch, approx.
113,000 pixels

Microphone: Stereo electret
condenser microphone

Output level: Video terminal: 1 Vp-
p/75 ohms, unbalanced; S-video
terminal: 1 Vp-p (Y signal),
0.286 Vp-p (C signal); audio
terminals: -10 dBV, less than 3
kohms, unbalanced

Operating temperature: 0°–40°C
(32°–104°F)

Dimensions: 102 × 103 × 176 mm
(4 × 4¹/₁₆ × 6¹⁵/₁₆ in)

Weight: UC-X2Hi: 790 g
(1 lb 11⁷/₈ oz); UC-X20Hi: 770 g
(1 lb 11¹/₈ oz)

BP-911 Battery Pack

Battery type: Rechargeable lithium
ion battery

Rated voltage: 7.2 V DC

Operating temperature: 0°–40°C
(32°–104°F)

Battery capacity: 1,150 mAh

Dimensions: 38.2 × 20.5 × 70.5 mm
(1¹/₂ × 1³/₁₆ × 2¹³/₁₆ in)

Weight: 96 g (3³/₈ oz)

Weight and dimensions are
approximate

Errors and omissions excepted.

Subject to change without notice.

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MEMO

Handwriting practice lines consisting of 20 rows of dashed lines on a white background.

11/11/16

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